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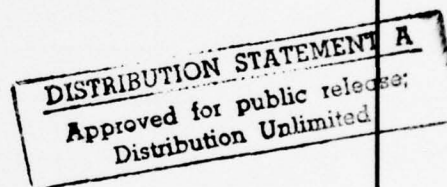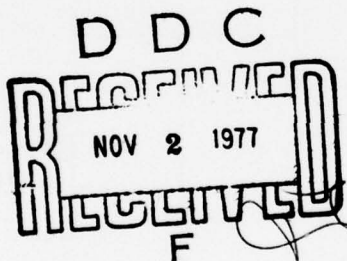
Bethesda, Md. 20084

COMPUTER CENTER LIBRARIES/UTILITY (PROGRAMS)

by

David V. Sommer
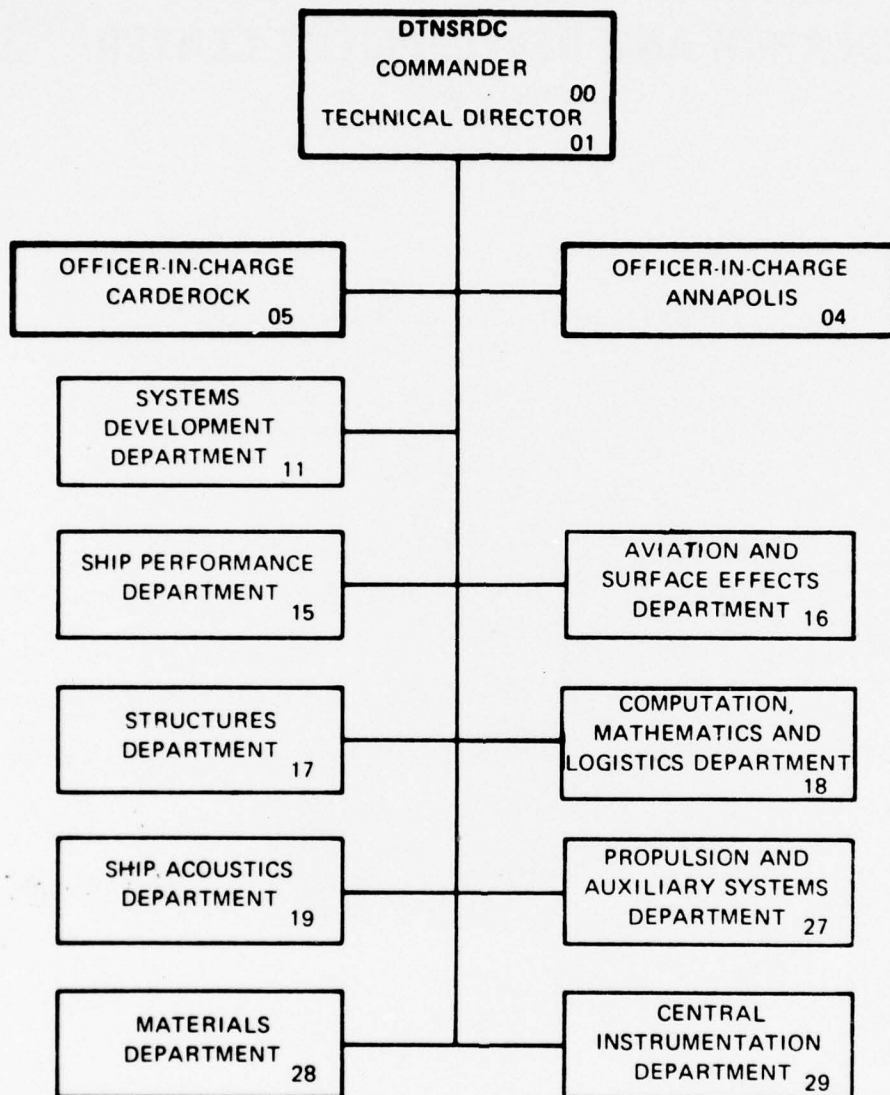
Computation, Mathematics and

Logistics Department

MAJOR DTNSRDC ORGANIZATIONAL COMPONENTS

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                        │       DTNSRDC        │
                        │     COMMANDER        │
                        │                  00  │
                        │  TECHNICAL DIRECTOR  │
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| OFFICER-IN-CHARGE CARDEROCK 05 | OFFICER-IN-CHARGE ANNAPOLIS 04 |

| SYSTEMS DEVELOPMENT DEPARTMENT 11 | |

| SHIP PERFORMANCE DEPARTMENT 15 | AVIATION AND SURFACE EFFECTS DEPARTMENT 16 |

| STRUCTURES DEPARTMENT 17 | COMPUTATION, MATHEMATICS AND LOGISTICS DEPARTMENT 18 |

| SHIP ACOUSTICS DEPARTMENT 19 | PROPULSION AND AUXILIARY SYSTEMS DEPARTMENT 27 |

| MATERIALS DEPARTMENT 28 | CENTRAL INSTRUMENTATION DEPARTMENT 29 |

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
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Computer Programs
Functional Categories
Library File
Utilities
Software Documentation

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

Computer Center Libraries/Utility (Programs), CCLIB/U, is a reference manual which describes the programs in library "UTILITY". These programs are utilities such as tape and disk dumps, listers, selective copies, document generators/printers, card reformatters, library maintenance. CCLIB/U lists the programs by functional category and alphabetically with a descriptive title. All machine-readable documents detailing the use of these programs are included.

DD FORM
1 JAN 73 1473   EDITION OF 1 NOV 65 IS OBSOLETE
S/N 0102-014-6601

406 847

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BETHESDA, MARYLAND 20084

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*****************************************************
*                                                   *
*                                                   *
*       COMPUTER CENTER LIBRARIES / UTILITY         *
*                 (PROGRAMS)                        *
*                                                   *
*                                                   *
*                                                   *
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BY
DAVID V SOMMER

USER SERVICES BRANCH
CODE 1892

COMPUTATION, MATHEMATICS AND LOGISTICS DEPARTMENT
DEPARTMENTAL REPORT

TABLE OF CONTENTS

***** INTRODUCTION *****

THE COMPUTER CENTER MAKES AVAILABLE, IN ADDITION TO THE NOS/BE OPERATING SYSTEM, A WIDE VARIETY OF BOTH SCIENTIFIC AND UTILITY PROGRAMS, SUBPROGRAMS AND CATALOGUED PROCEDURES. MOST OF THE ROUTINES ARE MAINTAINED IN LIBRARIES ON PERMANENT FILES AND MAY BE INVOKED BY THE APPROPRIATE (LOADER) CONTROL CARDS. A FEW PROGRAMS ARE AVAILABLE AS INDEPENDENT PERMANENT FILES.

THE CCLIB-SERIES OF MANUALS CONTAINS THE FOLLOWING, WHICH DESCRIBE THE CONTENTS OF THE VARIOUS LIBRARIES MAINTAINED BY THE COMPUTER CENTER:

```
CCLIB   - COMPUTER CENTER LIBRARIES                      CMLD-77-12
CCLIB/N - COMPUTER CENTER LIBRARIES/NSRDC (SUBPROGRAMS)  CMLD-77-15
CCLIB/P - COMPUTER CENTER LIBRARIES/PROFIL (PROCEDURES)  CMLD-77-16
CCLIB/U - COMPUTER CENTER LIBRARIES/UTILITY (PROGRAMS)   CMLD-77-17
CCLIB/M - COMPUTER CENTER LIBRARIES/MNSRDC  (PROGRAMS)
```

THIS MANUAL, CCLIB/U, IS A REFERENCE MANUAL WHICH DESCRIBES ALL THE PROGRAMS IN LIBRARY 'UTILITY'.

*** HOW TO USE THIS MANUAL ***

THE PROGRAMS ARE CLASSIFIED IN ONE OR MORE FUNCTIONAL CATEGORIES (SEE PAGE 1-2 FOR A LIST OF CATEGORIES). THEY ARE LISTED, BEGINNING ON PAGE 1-5, UNDER THE VARIOUS CATEGORIES. THE INDIVIDUAL PROGRAMS ARE LISTED, WITH DESCRIPTIVE TITLE, BEGINNING ON PAGE 1-7. CHAPTER 2 CONTAINS ALL CURRENTLY AVAILABLE MACHINE-READABLE DOCUMENTS DESCRIBING THE USE OF PROGRAMS IN LIBRARY 'UTILITY'.

*** LIBRARY UTILITY ***

'UTILITY' IS A LIBRARY OF DTNSRDC WRITTEN AND/OR SUPPORTED UTILITIES AND INCLUDES TAPE AND DISK DUMPS, LISTERS, SELECTIVE COPIES, DOCUMENT GENERATORS/PRINTERS, CARD REFORMATTERS, LIBRARY MAINTENANCE ROUTINES.

*** EXECUTING A PROGRAM ***

PROGRAMS IN THIS LIBRARY ARE EXECUTED IN ONE OF THE FOLLOWING WAYS:

```
A) ATTACH,UTILITY.
   LIBRARY,UTILITY.      OR      LDSET,LIB=UTILITY.
   <PROG>,<PARAMETERS>.          WHERE <PROG> IS THE DESIRED
                                 PROGRAM

B) BEGIN,UTILITY,,<PROG>,<PARAMETERS>.
```

*** FUNCTIONAL CATEGORIES ***

THE FOLLOWING FUNCTIONAL CATEGORIES ARE USED AT DTNSRDC. THOSE
CATEGORIES PRECEDED BY AN ASTERISK (*) ARE LOCAL DTNSRDC CATEGORIES.
THE OTHER ARE FROM THE VIM (CDC USERS GROUP) LIST.

```
    A0   ARITHMETIC ROUTINES
    A1   REAL NUMBERS
    A2   COMPLEX NUMBERS
    A3   DECIMAL
    A4   I/O ROUTINES

    B0   ELEMENTARY FUNCTIONS
    B1   TRIGONOMETRIC
    B2   HYPERBOLIC
    B3   EXPONENTIAL AND LOGARITHMIC
    B4   ROOTS AND POWERS

    C0   POLYNOMIALS AND SPECIAL FUNCTIONS
    C1   EVALUATION OF POLYNOMIALS
    C2   ROOTS OF POLYNOMIALS
    C3   EVALUATION OF SPECIAL FUNCTIONS (NON-STATISTICAL)
    C4   SIMULTANEOUS NON-LINEAR ALGEBRAIC EQUATIONS
    C5   SIMULTANEOUS TRANSCENDENTAL EQUATIONS
 *  C6   ROOTS OF FUNCTIONS

    D0   OPERATIONS ON FUNCTIONS AND SOLUTIONS OF DIFFERENTIAL EQJATIONS
    D1   NUMERICAL INTEGRATION
    D2   NUMERICAL SOLUTIONS OF ORDINARY DIFFERENTIAL EQUATIONS
    D3   NUMERICAL SOLUTIONS OF PARTIAL DIFFERENTIAL EQUATIONS
    D4   NUMERICAL DIFFERENTIATION

    E0   INTERPOLATION AND APPROXIMATIONS
    F1   TABLE LOOK-UP AND INTERPOLATION
    E2   CURVE FITTING
    E3   SMOOTHING
    E4   MINIMIZING OR MAXIMIZING A FUNCTION

    F0   OPERATIONS ON MATRICES, VECTORS & SIMULTANEOUS LINEAR EQUATIONS
    F1   VECTOR AND MATRIX OPERATIONS
    F2   EIGENVALUES AND EIGENVECTORS
    F3   DETERMINANTS
    F4   SIMULTANEOUS LINEAR EQUATIONS

    G0   STATISTICAL ANALYSIS AND PROBABILITY
    G1   DATA REDUCTION (COMMON STATISTICAL PARAMETERS)
    G2   CORRELATION AND REGRESSION ANALYSIS
    G3   SEQUENTIAL ANALYSIS
    G4   ANALYSIS OF VARIANCE
    G5   TIME SERIES
    G6   SPECIAL FUNCTIONS (INCLUDES RANDOM NUMBERS AND PDF'S)
 *  G7   MULTIVARIATE ANALYSIS AND SCALE STATISTICS
 *  G8   NON-PARAMETRIC METHODS AND STATISTICAL TESTS
 *  G9   STATISTICAL INFERENCE
```

H0 OPERATIONS RESEARCH TECHNIQUES, SIMULATION & MANAGEMENT SCIENCE
H1 LINEAR PROGRAMMING
H2 NON-LINEAR PROGRAMMING
H3 TRANSPORTATION AND NETWORK CODES
H4 SIMULATION MODELING
H5 SIMULATION MODELS
H6 CRITICAL PATH PROGRAMS
H8 AUXILIARY PROGRAMS
H9 COMBINED

I0 INPUT
I1 BINARY
I2 OCTAL
I3 DECIMAL
I4 BCD (HOLLERITH)
I9 COMPOSITE

J0 OUTPUT
J1 BINARY
J2 OCTAL
J3 DECIMAL
J4 BCD (HOLLERITH)
J5 PLOTTING
J7 ANALOG
J9 COMPOSITE

K0 INTERNAL INFORMATION TRANSFER
K1 EXTERNAL-TO-EXTERNAL
K2 INTERNAL-TO-INTERNAL (RELOCATION)
K3 DISK
K4 TAPE
K5 DIRECT DATA DEVICES

L0 EXECUTIVE ROUTINES
L1 ASSEMBLY
L2 COMPILING
L3 MONITORING
L4 PREPROCESSING
L5 DISASSEMBLY AND DERELATIVIZING
L6 RELATIVIZING
L7 COMPUTER LANGUAGE TRANSLATORS

M0 DATA HANDLING
M1 SORTING
M2 CONVERSION AND/OR SCALING
M3 MERGING
M4 CHARACTER MANIPULATION
M5 SEARCHING, SEEKING, LOCATING
M6 REPORT GENERATORS
M9 COMPOSITE

N0 DEBUGGING
N1 TRACING AND TRAPPING
N2 DUMPING
N3 MEMORY VERIFICATION AND SEARCHING
N4 BREAKPOINT PRINTING

00   SIMULATION OF COMPUTERS AND DATA PROCESSORS (INTERPRETERS)
01   OFF-LINE EQUIPMENT (LISTERS, REPRODUCERS, ETC.)
03   COMPUTERS
04   PSEUDO-COMPUTERS
05   SOFTWARE SIMULATION OF PERIPHERALS
09   COMPOSITE

P0   DIAGNOSTICS (HARDWARE MALFUNCTION)

Q0   SERVICE OR HOUSEKEEPING, PROGRAMMING AIDS
Q1   CLEAR/RESET
Q2   CHECKSUM ACCUMULATION AND CORRECTION
Q3   REWIND, TAPE MARK, LOAD CARDS, LOAD TAPE PROGRAMS, ETC.
Q4   INTERNAL HOUSEKEEPING, SAVE, RESTORE, ETC.
Q5   REPORT GENERATOR SUBROUTINES
Q6   PROGRAM DOCUMENTATION: FLOW CHARTS, DOCUMENT, STANDARDIZATION
Q7   PROGRAM LIBRARY UTILITIES

R0   LOGIC AND SYMBOLIC
R1   FORMAL LOGIC
R2   SYMBOL MANIPULATION
      LIST AND STRING PROCESSING

      INFORMATION RETRIEVAL

T0   APPLICATIONS AND APPLICATION-ORIENTED PROGRAMS
T1   PHYSICS (INCLUDING NUCLEAR)
T2   CHEMISTRY
T3   OTHER PHYSICAL SCIENCES (GEOLOGY, ASTRONOMY, ETC.)
T4   ENGINEERING
T5   BUSINESS DATA PROCESSING
T6   MANUFACTURING (NON-DATA) PROCESSING AND PROCESS CONTROL
T7   MATHEMATICS AND APPLIED MATHEMATICS
T8   SOCIAL AND BEHAVIORAL SCIENCES AND PSYCHOLOGY
T9   BIOLOGICAL SCIENCES
T10   REGIONAL SCIENCES (GEOGRAPHY, URBAN PLANNING)
T11   COMPUTER ASSISTED INSTRUCTION

U0   LINGUISTICS AND LANGUAGES

V0   GENERAL PURPOSE UTILITY SUBROUTINES
V1   RANDOM NUMBER GENERATORS
V2   COMBINATORIAL GENERATORS: PERMUTATIONS, COMBINATIONS & SUBSETS
* V3   STANDARD AND SPECIAL PROBLEMS

X0   DATA REDUCTION
X1   RE-FORMATTING, DECOMMUTATION, ERROR DIAGNOSIS
X2   EDITING
X3   CALIBRATION
X4   EVALUATION
X5   ANALYSIS (TIME-SERIES ANALYSIS)
X6   SIMULATION (GENERATE TEST DATA FOR DATA REDUCTION SYSTEM)

Y0   INSTALLATION MODIFICATION
Y1   INSTALLATION MODIFICATION LIBRARY
Y2   NEWPL TAPE OF INSTALLATION MODIFICATIONS

Z0   ALL OTHERS

***   LIST OF PROGRAMS BY CATEGORY   ***

THE PROGRAMS IN LIBRARY 'UTILITY' ARE LISTED BELOW UNDER THEIR FUNCTIONAL CATEGORIES. AN ALPHABETICAL LIST, WITH A BRIEF DESCRIPTION OF EACH PROGRAM BEGINS ON PAGE 1-7.

```
J0    OUTPUT
          MPSCM


J1    BINARY
          CV29


J9    COMPOSITE
          HEXDMP      PRUDMP      TAPDMP


K1    EXTERNAL-TO-EXTERNAL
          COPYRE      COPYSEL     PROMNT


K3    DISK
          COPYLIB     DOCUMNT     GETOBJ      PRUDMP


K4    TAPE
          HEXDMP      TAPDMP


M1    SORTING
          AUDSORT     DEKSORT


M2    CONVERSION AND/OR SCALING
          CV29


M4    CHARACTER MANIPULATION
          COPYEXT     FORMATR


N2    DUMPING
          DMPFIL


01    OFF-LINE EQUIPMENT
          CARDS       COPYEXT     CV29        LISTEOI     LIST2       PAGEPRT
          CARDS2      COPYRE      LINERL      LISTZ       LIST3
          CCRM        COPYSEL     LISTCMP     LIST1       LIST4


Q0    SERVICE OR HOUSEKEEPING, PROGRAMMING AIDS
          AUDSORT     BANNER3     JOBTIME     LINERL      WHATLIB     WHICHOS
          BANNER      DFDATIM     LINER       PTIM        WHICHMF


Q6    PROGRAM DOCUMENTATION: FLOW CHARTS, DOCUMENT, STANDARDIZATION
          DOC         DOCUMNT     MANYDOC     PFDOC       PURPOSE     UNDOCIT
          DOCIT       EXECARD     MTDOC       PROGDOC     TAPLIST
```

Q7   PROGRAM LIBRARY UTILITIES
          BINDEX   DECKLST   LISTBIN   PROMNT   SORTUP
          DECK   DEKSORT   LISTCMP   REDECK

R4   TEXT EDITING
          FORMATR

S0   INFORMATION RETRIEVAL
          EXECARD   PAGEPRT   PURPOSE   TAPLIST

*** DESCRIPTIVE TITLES ***

PROGRAMS IN LIBRARY 'UTILITY' ARE LISTED ALPHABETICALLY BELOW.

AUDSORT   PRINT SORTED AUDIT

BANNER   PRINT A BANNER (PAGE)

BANNER3   PRINT 3 BANNERS ON ONE PAGE

BINDEX   GIVE LIST AND SORTED LIST OF OUTPUT OF EDITLIB 'LISTLIB' AND
           'CONTENT' DIRECTIVES

CARDS   REPRODUCE A BCD DECK WITH MODIFICATONS (FIELDS MAY BE
           MOVED, DELETED, INTERCHANGED, GANG PUNCHED AND/OR SEQUENCED)

CARDS2   REPRODUCE A BCD DECK WITH MODIFICATIONS (FIELDS MAY BE
           COPIED, MOVED, DELETED, INTERCHANGED, GANG PUNCHED AND/OR
           SEQUENCED)

CCRM   EXTRACT ALL PAGES FROM COMPUTER CENTER REFERENCE MANUAL WHICH
           WERE MODIFIED AFTER USER-SPECIFIED DATE

COPYEXT   COPY UNIT RECORDS (ZERO BYTE TERMINATED) EXTRACTING SPECIFIED
           COLUMNS AND OPTIONALLY MOVING THEM AND OPTIONALLY ADD EDITOR
           SEQUENCING

COPYLIB   FROM AN EDITLIB LISTLIB LISTING, CREATE SORTED (OR UNSORTED)
           DIRECTIVES TO COPY AN EDITLIB USER LIBRARY

COPYRE   COPY AND REARRANGE FILE OF ZERO BYTE TERMINATED RECORDS (150
           CHARACTERS MAXIMUM PER RECORD)

COPYSEL   COPY AND REARRANGE FILE OF ZERO BYTE TERMINATED RECORDS (150
           CHARACTERS MAXIMUM PER RECORD; FILE PROCESSED DIRECTLY)

CV29   CONVERT TO 029 PUNCH CODE

DECK   LIST UPDATE 'SOURCE' FILE DECK/COMDECK NAMES, SEQUENCE NUMBER
           AND NUMBER OF CARDS

DECKLST   LIST UPDATE 'SOURCE' FILE DECK/COMDECK NAMES, SEQUENCE
           NUMBER, NUMBER OF CARDS, NUMBER OF LINES AND PAGES (IF COLUMN
           1 CARRIAGE CONTROL IS USED) (LIST CONTENTS OF A
           DOCUMENTATION FILE)

DEKSORT   SORT IDENT AND DECK LISTINGS FROM UPDATE OUTPUT FILE

DFDATIM   PUT DATE/TIME IN DAYFILE

DMPFIL   DUMP FIRST N WORDS OF EACH LOGICAL RECORD IN M FILES

DOC   PREPARE (SUB)PROGRAM AND CATALOGUED PROCEDURE DOCUMENTATION

DOCIT   ADD PAGING TO A DOCUMENT

DOCUMNT   MAINTAIN A FILE OF DOCUMENTS

EXECARD   EXTRACT EXECUTE CARD PARAMETER/SUBPROGRAM USAGE/PROCEDURE
           USAGE INFORMATION FROM DOCUMENTATION FILES (WHICH WERE
           PREPARED IN THE FORMAT GENERATED BY PROGRAM 'DOC')

FORMATR   THIS IS A TEXT FORMATTER. IT IS DESIGNED TO BE OF ASSISTANCE
           TO THE PERSON WHO NEEDS TO MANIPULATE TEXT FILES WHICH ARE
           NOT INHERENTLY LINE ORIENTED. IT WILL ACCEPT FREE-FORM INPUT
           AND GENERATE FORMATTED OUTPUT UTILIZING ARBITRARILY SIZED
           RECORDS. THE INPUT CONSISTS OF TEXT AND OPTIONAL DIRECTIVES
           WHICH CONTROL SUCH FUNCTIONS AS PARAGRAPH INDENTING AND LINE
           SPACING.

GETOBJ   EXTRACT ONE OBJECT MODULE FROM A SEQUENTIAL OBJECT FILE OR AN
           EDITLIB USER LIBRARY

HEXDMP   DUMP 9-TRACK TAPE IN HEXADECIMAL FORMAT

JOBTIME   PUT JOB CP EXECUTION TIME TO THIS POINT INTO DAYFILE

LINER   COUNT LINES AND PAGES OF A FILE HAVING FIRST CHARACTER
           CARRIAGE CONTROL

LINERL   LIST A DOCUMENT (CARRIAGE CONTROL IN COLUMN 1, ZERO BYTE
           TERMINATED RECORDS) WITH RECORD COUNT AND COUNT OF LINES ON
           EACH PAGE (LIST THRU END-OF-INFORMATION)

LISTBIN   LIST RELOCATABLE BINARY MODULES IN ONE OR MORE FILES

LISTCMP   LIST AN UPDATE COMPILE FILE, EACH DECK BEGINNING ON A NEW
           PAGE WITH A BANNER PAGE PRECEDING IT

LISTEOI   LIST A FILE INSERTING *EOR, *EOF, *EOI WHERE APPROPRIATE

LISTZ   LIST ZERO BYTE TERMINATED RECORDS (UP TO 110 CHARACTERS PER
           RECORD) WITH RECORD NUMBER AND RECORD LENGTHS

LIST1   LIST (CENTERED) ONE COPY OF CARDS (UP TO 90 CHARACTERS)
           HAVING CARRIAGE CONTROL IN COLUMN 1. OPTIONALLY PRINT CARD,
           PAGE AND LINE COUNTS AND LINE LENGTHS.

LIST2   SINGLE/DOUBLE SPACE LISTING, 6 OR 8 LINES PER INCH, WITH
           OPTIONAL SKIP OVER PERFORATION AT BOTTOM OF PAGE (FIRST 120
           CHARACTERS)

LIST3   LIST FIRST (UP TO 90-CHARACTER, ZERO BYTE TERMINATED) RECORD
           IN EACH LOGICAL RECORD THROUGH EOI

LIST4   LIST UNIT RECORDS, THRU EOI, WHICH HAVE '1' IN COLUMN 1

MANYDOC   EXTRACT (PRINT) TWO OR MORE DOCUMENTS FROM A DOCUMENTATION
           FILE

MPSCM   CONVERT PRINTED OUTPUT DATA INTO A COM FORMATTED TAPE TO
           PRODUCE MICROFICHE ON THE DATAGRAPHIX 4530 SYSTEM

MTDOC   CREATE DOCUMENTATION TO DESCRIBE THE CONTENTS OF A MAGNETIC
           TAPE

PAGEPRT   PRINT SELECTED PAGE(S) FROM A DOCUMENT

PFDOC   CREATE PERMANENT FILE DOCUMENTATION

PROGDOC   EXTRACT (PRINT) ONE OR ALL DOCUMENT(S) FROM A DOCUMENTATION
           FILE

PROMNT   MAINTAIN AN ALPHABETICAL, SEQUENTIAL PROCEDURE FILE, EACH
           PROCEDURE BEING ONE SCOPE LOGICAL RECORD

PRUDMP   OCTAL AND CHARACTER DUMP OF DISK FILE BY RELATIVE PRU NUMBER

PTIM   PRINT CPA, CPB, CPA+CPB, IO AND PP TIMES SINCE START OF JOB
           OR INTERCOM SESSION

PURPOSE   EXTRACT PURPOSE INFORMATION FROM DOCUMENTATION FILES (WHICH
           WERE PREPARED IN THE FORMAT GENERATED BY PROGRAM 'DOC')

REDECK   CHANGE AN UPDATE COMPILE FILE BACK INTO A SOURCE FILE

SORTUP   GENERATE UPDATE DIRECTIVES TO SORT OLDPL

TAPDMP   DUMP SELECTED PORTIONS OF A 7-TRACK MAGNETIC TAPE WRITTEN IN
           AN UNKNOWN DENSITY AND/OR MODE. IT IS CONTROLLED BY A SERIES
           OF FREE-FIELD CONTROL CARDS CONTAINING ORDERS FOR THE
           DUMPING, SKIPPING OR BACKSPACING OF RECORDS OR FILES.

TAPLIST   PREPARE TWO LISTS FROM MAGTAPEDOCUMENTATION FILE:
               1) TAPE NUMBER, LABEL, DENSITY, REMARKS AND DESCRIPTION
                  FOR EACH TAPE DOCUMENTED IN FILE
               2) LIST OF TAPE NUMBERS AND LABELS

UNDOCIT   REMOVE THE PAGING WHICH WAS ADDED TO A DOCUMENT BY PROGRAM
           'DOCIT'

WHATLIB   LIST LIBRARIES SPECIFIED ON LAST LIBRARY CARD

WHICHCP   TELL TELETYPE USER WHICH MACHINE HE IS USING

WHICHOS   TELL TELETYPE USER WHICH OPERATING SYSTEM HE IS USING

***** PROGRAM DOCUMENTATION *****

THIS CHAPTER CONTAINS THE DOCUMENTATION FOR ALL PROGRAMS IN LIBRARY 'UTILITY'.

INDIVIDUAL DOCUMENTS MAY BE PRINTED USING:

        BEGIN,UTILITY,,PROGDOC,UTILITY,,<PROG>,OUTPUT.

WHERE <PROG> IS THE DESIRED DOCUMENT.

SEVERAL DOCUMENTS MAY BE PRINTED AT ONE TIME USING:

        JOBNAME.
        CHARGE,....
        BEGIN,UTILITY,,MANYDOC,UTILITY.
        *   7/8/9   EOR
        <PROG1>
        <PROG2>
           ...
        <PROGN>
        "   6/7/8/9   EOF

PROGRAM 'AUDSORT'

PURPOSE
    PRINT SORTED AUDIT

FUNCTIONAL CATEGORIES: M1 Q0

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    THE SORTED LIST WILL HAVE THE FULL PFN SORTED
    ALPHAMERICALLY. DIFFERENT CYCLES OF THE SAME PFN WILL BE
    LISTED IN DESCENDING ORDER.

    PFN FOR INTERCOM AUDIT IS 29 CHARACTERS; FOR SHORT, PARTIAL
    AND FULL AUDITS, 40 CHARACTERS.

EXECUTION
    FROM BATCH
        AUDIT,LF=OUT,....
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        AUDSORT,OUT.

    FROM TTY
        AUDIT,LF=OUT,....
        CONNECT,OUTPUT.
        BEGIN,UTILITY,,AUDSORT,OUT.

    EXECUTE CARD PARAMETERS
        AUDSORT,AUDFILE,OUTPUT.
            AUDFILE - INPUT FILE TO BE SORTED (AUDIT OUTPUT)
            OUTPUT - LISTABLE OUTPUT

    DEFAULT EXECUTE CARD
        AUDSORT,TAPE1,OUTPUT.

    DEFAULT PL: 5000 LINES

    FL NEEDED TO LOAD: 36000B
    FL NEEDED TO RUN : 26000B

ERROR MESSAGES
    MORE THAN 1000 PFNS, JOB TERMINATED
        PROGRAM MUST BE RE-DIMENSIONED. CALL USER SERVICES.

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   ---
               OUTPUT   LISTABLE OUTPUT
       1   TAPE1   INPUT FILE TO BE SORTED
                          (AUDIT OUTPUT FILE)
       4   ZZWORK   RANDOM WORK FILE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   CLOSMS   EOF   MOVLEV   OPENMS
        OR   READMS   RECOVR   REMARK   SHIFT
        WRITMS
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        IFMTV   - FAST I-FORMAT DECODE
        MOVSTR - MOVE CHARACTER STRING
        REDUCE - GET ADDITIONAL CORE NEEDED
        REPLAC - REPLACE ONE CHARACTER WITH ANOTHER
        VFILL   - FILL ARRAY WITH WORD
        UNLOAD - RETURN,TAPE4.

ARITHMETIC STATEMENT FUNCTIONS
    FAST A-FORMAT DECODE
        A106FMT
    FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
        R29FMT   R38FMT   R44FMT   R81FMT   R91FMT
        R92FMT   R95FMT   R96FMT   R97FMT   R98FMT
        R910FMT

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 01/07/75

DATE(S) REVISED
        01/08/75   01/10/75   01/13/75   01/20/75   02/04/75
        02/28/75   08/06/76
        02/24/77 - MODIFY FULL AUDIT FOR NOS/BE 1.0
        02/25/77 - MODIFY FOR NEW NOS/BE SN AUDIT
        04/12/77 - MODIFY FOR SHARED-FILES AUDIT HEADINGS

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'BANNER'

PURPOSE
    PRINT A BANNER (PAGE)

FUNCTIONAL CATEGORY: Q0

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    THE BANNER PRINTED IS 10 LINES HIGH. IT MAY BE PRINTED ON A
    NEW PAGE OR THE CURRENT PAGE, DEPENDING ON THE ABSENCE OR
    PRESENCE OF A THIRD PARAMETER IN THE EXECUTE CARD.
    ONLY 2 BANNERS WILL FIT ON A PAGE.

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        BANNER,ANY.   PRINT BANNER PAGE WITH WORD 'ANY'

    FROM TTY
        BEGIN,UTILITY,,BANNER,ANY,OUT.
            ...   NORMALLY, MORE PROGRAMS WILL WRITE ON
                                'OUT'
        DISPOSE,OUT,PR=XYY.

    EXECUTE CARD PARAMETERS
        BANNER,NAME,OUTPUT,WHERE.
            NAME   - WORD TO BE PRINTED (1-7 CHARACTERS -
                      LETTERS AND NUMBERS ONLY)
                      THE FOLLOWING VALUES OF NAME HAVE SPECIAL
                      MEANING:
                          CPU   - PRINT THE CPU (6400/6600/6700)
                          DATE   - PRINT THE DATE (MMDDYY)
                          TIME   - PRINT THE TIME (HHMMSS)
            OUTPUT - LISTABLE OUTPUT
            WHERE - OMITTED   - PRINT BANNER ON A NEW PAGE
                     NON-BLANK - PRINT BANNER ON SAME PAGE

    DEFAULT EXECUTE CARD
        BANNER,DUMMY,OUTPUT,NEWPAG.

    FL NEEDED TO LOAD: 24000B
    FL NEEDED TO RUN : 14000B

OUTPUT UNIT
    UNIT #   LFN   USE
    -------   -------   ---
                OUTPUT   LISTABLE OUTPUT

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   DATE   SHIFT   TIME
    OTHERS
        CPU467 - GET CPU
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        LEFTADJ - SQUEEZE LEFT AND REMOVE BLANKS AND 00B

```
AUTHOR
   DAVID V SOMMER - NSRDC CODE 1892.2

DATE WRITTEN: 06/20/74

DATE(S) REVISED
   06/19/75
   11/02/76 - ADD BANNER,CPU,....

LOCATION OF DECKS
   SOURCE
      UPDATE LIBRARY:   UTILITYPL,ID=CSYS
   OBJECT
      EDITLIB USER LIBRARY:   UTILITY
```

PROGRAM 'BANNER3'

PURPOSE
    PRINT 3 BANNERS ON ONE PAGE

FUNCTIONAL CATEGORY: Q0

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    NONE

EXECUTION
    FROM BATCH
        BEGIN,UTILITY,,BANNER3,OUTPUT,<PARAMS>.

    FROM TTY
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        BANNER3,OUT,<PARAMS>.
            (USUALLY MORE OUTPUT IS WRITTEN ONTO OUT)
        ROUTE,OUT,DC=PR,....

    EXECUTE CARD PARAMETERS
        BANNER3,OUTPUT,BANR1,BANR2,BANR3.
            OUTPUT   - LISTABLE OUTPUT
            BANR1   - FIRST BANNER (1-7 CHARACTERS)
            BANR2   - SECOND BANNER (1-7 CHARACTERS)
            BANR3   - THIRD BANNER (1-7 CHARACTERS)
        THE FOLLOWING ARE RECOGNIZED FOR ANY BANR-N:
            CPU - BANNER IS MACHINE JOB IS RUNNING ON
            DATE - BANNER IS CURRENT DATE
            TIME - BANNER IS CURRENT TIME

    DEFAULT EXECUTE CARD
        BANNER3,OUTPUT,CPU,DATE,TIME.

    DEFAULT PL: 5000 LINES

    FL NEEDED TO LOAD: 25000B
    FL NEEDED TO RUN : 15000B

OUTPUT UNIT
    UNIT #   LFN   USE
    -------   -------   --
               OUTPUT   LISTABLE OUTPUT

```
SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND        DATE        TIME
    OTHERS
        BANR     - WRITE A BANNER
        CPU467   - GET THIS CPU
        GETLFNS  - GET ACTUAL LOCAL FILE NAMES

ARITHMETIC STATEMENT FUNCTIONS
    LB2FMT   - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 05/11/77

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:    UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'BINDEX'

PURPOSE
    GIVE LIST AND SORTED LIST OF OUTPUT OF EDITLIB 'LISTLIB'
    AND 'CONTENT' DIRECTIVES

FUNCTIONAL CATEGORY: Q7

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    'CONTENT' AND 'LISTLIB' DIRECTIVES SHOULD NOT BE MIXED IN
    THE SAME EDITLIB. MULTIPLE 'LISTLIB' DIRECTIVES
    MAY BE USED IN ONE EDITLIB. ONLY ONE 'CONTENT' DIRECTIVE
    SHOULD BE USED IN AN EDITLIB.

EXECUTION
    FROM BATCH
        ATTACH,LFN,....   (FILE/LIBRARY TO BE 'BINDEXED')
        EDITLIB,L=TAPE1.
        BEGIN,UTILITY,,BINDEX.
        7/8/9
           (EDITLIB LISTLIB OR CONTENT DIRECTIVES)
        ENDRUN.
        6/7/8/9

    FROM TTY
        ATTACH,LFN,....   (FILE/LIBRARY TO BE 'BINDEXED')
        CONNECT,INPUT
        EDITLIB,L=TAPE1.
           (ENTER EDITLIB LISTLIB OR CONTENT DIRECTIVES)
        ENDRUN.
        (PERCENT) EOF
        BEGIN,UTILITY,,BINDEX,,OUT.
        ROUTE,OUT,DC=PR,....

    EXECUTE CARD PARAMETERS
        BINDEX,TAPE1,OUTPUT,FILENAME,SIZE,LEFT,SORT.
            TAPE1   - INPUT FILE
                        (OUTPUT OF EDITLIB)
            OUTPUT   - LISTABLE OUTPUT
            FILENAME - FILE NAME FOR HEADING
                        USED WHEN TAPE1 IS OUTPUT OF 'CONTENT'
                        DIRECTIVE. IS MISSING, 'BINARY FILE' IS
                        USED.
            SIZE   - ESTIMATED NUMBER OF FILES LISTED ON
                        TAPE1. RANGE IS 20-2000.
                        DEFAULT: 20.
            LEFT   - PRINT CENTERING
                        LEFT OR MISSING - PRINT LEFT-ADJUSTED ON
                                          PAGE
                        OTHER   - PRINT IN CENTER OF PAGE
            SORT   - IF OMITTED OR 'SORT' - PRINT SORTED LIST(S)
                        IF ANYTHING ELSE - PRINT FIRST LIST ONLY

```
DEFAULT EXECUTE CARD
    BINDEX,TAPE1,OUTPUT,'BINARY FILE',20,LEFT,SORT.

FL NEEDED TO LOAD: 27000B
    (PROGRAM GETS CORE AS IT IS NEEDED)

INPUT/OUTPUT UNITS
    UNIT #    LFN                          USE
    -------   -------   ------------------------------------------
              OUTPUT    LISTABLE OUTPUT
       1      TAPE1     INPUT FILE (OUTPUT OF EDITLIB 'LISTLIB'
                        OR 'CONTENT' DIRECTIVE)


SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND       EOF       MAX0      MIN0      MOD
        MOVLEV    OR        RECOVR    REMARK    SHIFT
    PART OF PROGRAM
        EOJ     - ABNORMAL TERMINATION ROUTINE
        PRINTIT - PRINT ORIGINAL LISTING
        SORTIT  - SORT AND PRINT ADDITIONAL LISTINGS
    OTHERS
        ASORTMV - SORT 2 DIMENSIONAL ARRAY
        FTNRFL  - GET CURRENT FL
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        IFMTV   - FAST VARIABLE I-FORMAT DECODE
        ISITCNF - TEST FOR CONNECTED FILE
        REDUCE  - GET CORE AS REQUIRED
        REPLAC  - REPLACE ONE CHARACTER BY ANOTHER

ARITHMETIC STATEMENT FUNCTIONS
    FAST A-FORMAT DECODES
        A22FMT    A55FMT    A62FMT    A63FMT
    FAST L-FORMAT DECODES (LEFT-ADJ, ZERO-FILLED)
        L43FMT    L45FMT    L71FMT    L76FMT

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 02/06/75

DATE(S) REVISED
    03/03/75
    11/03/75
    04/08/75
    10/22/76 - BYPASS PAGE HEADINGS WHEN ENTRY POINTS ARE ON TWO
               PAGES.  ADD THE PAGE NUMBER FROM THE EDITLIB
               LISTING TO THE FIRST LIST IN COLUMNS 118-120.  IF
               THE OUTPUT FILE IS CONNECTED TO A TELETYPE AND
               LEFT JUSTIFICATION IS REQUESTED, COLUMNS 70-72
               ARE USED.

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:    UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'CARDS'

PURPOSE
    REPRODUCE A BCD DECK WITH MODIFICATONS. (FIELDS MAY BE
    MOVED, DELETED, INTERCHANGED, GANG PUNCHED AND/OR SEQUENCED)

    FUNCTIONAL CATEGORY: 01

REMARKS
    1) UP TO 5 FIELDS MAY BE INTERCHANGED
    2) UP TO 10 FIELDS MAY BE MOVED AND REPLACED BY BLANKS
    3) UP TO 5 FIELDS MAY BE DELETED
    4) GANG PUNCHING OF UP TO 65 COLUMNS MAY BE INSERTED
       IN A FIXED FIELD
    5) SEQUENCING MAY BE PERFORMED IN A FIELD OF UP TO
       10 COLUMNS
    6) OPTIONS MAY BE SPECIFIED IN ANY ORDER, BUT ARE PROCESSED
       AS FOLLOWS:
           A) ALL SWAPS, IN THE ORDER READ
           B) ALL MOVES, IN THE ORDER READ
           C) ALL DELETES, IN THE ORDER READ
           D) ALL GANGPUNCHING, IN THE ORDER READ
           E) SEQUENCING IS PUT IN

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        DATE
        EOF
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES

ARITHMETIC STATEMENT FUNCTIONS
    NONE

LANGUAGE: FORTRAN IV

INPUT/OUTPUT UNITS
    FORTRAN   LOCAL
    LOGICAL   FILE
    U_N_I_I   _NAME__   -------------------USE--------------------
       5   INPJT   INPUT FILE CONTAINING FIELD CONTROL
                          CARDS AND THE DECK TO BE REPRODUCED
               OUTPUT   LISTABLE OUTPUT
               PUNCH   PUNCHED OUTPUT

```
EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        LDSET,LIB=UTILITY.
        CARDS.
        '    7/8/9      EOR
            (FIELD CONTROL CARDS)
            (BLANK CARD  OR  7/8/9)
            (DECK TO BE REPRODUCED)
        "    6/7/8/9    EOF

    FROM TTY
        ATTACH,IN,....        (FIELD CONTROL CARDS AND DECK)
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        CARDS,IN,OUT.
        DISPOSE,OUT,PR=KYY.
        DISPOSE,PUNCH,PU=KYY.

    EXECUTE CARD PARAMETERS
        CARDS,INFILE,OUTPUT,PUNCH,LIST.
            INFILE   - INPUT FILE CONTAINING FIELD CONTROL
                         CARDS AND THE DECK TO BE REPRODUCED
            OUTPUT   - LISTABLE OUTPUT
            PUNCH    - PUNCHED OUTPUT
            LIST     - PRINT OPTION
                         OMITTED OR 'LIST' - LIST CARDS
                         ANYTHING ELSE     - DO NOT LIST CARDS

    DEFAULT EXECUTE CARD
        CARDS,INPUT,OUTPUT,PUNCH,LIST.

    FL NEEDED TO LOAD: 26000B

DATA CARDS
    ONE OR MORE FIELD CONTROL CARDS FOLLOWED BY A BLANK CARD
    (OR 7/8/9 END-OF-RECORD) FOLLOWED BY THE DECK TO BE
    REPRODUCED.

    FIELD CONTROL CARDS
        COL      CONTENTS
        -----    --------
         1       TYPE OF MODIFICATION
                 D - DELETE
                 E - ENDPUNCH (SEQUENCE)
                 G - GANG PUNCH
                 M - MOVE
                 S - SWAP (INTERCHANGE)
        2-3      BLANK
        4-15     UP TO FOUR (4) 3-COLUMN INTEGER PARAMETERS
                 (I1 I2 I3 I4)
       16-80     ALPHAMERIC TEXT FIELD, LEFT-JUSTIFIED
                 ('G' TYPE ONLY)
```

```
MODIFICATION TYPES
    D   I1 I2                DELETE COLUMNS I1 THRU I2
                            AND REPLACE WITH BLANKS
    E   I1 I2 I3 I4          PUT SEQUENTIAL NUMBERS INTO
                            COLUMNS I1 THRU I2, RIGHT-
                            JUSTIFIED, ZERO-FILLED, BEGINNING
                            WITH I3, INCREMENTING BY I4
                            (DEFAULT: E   77 80 10 10)
    G   I1 I2       TEXT...  REPLACE COLUMNS I1 THRU I2
                            WITH THE SPECIFIED TEXT FIELD
                            (DEFAULT: G   73 76)
    M   I1 I2 I3 I4          MOVE FIELD IN COLUMNS I1 THRU I2
                            TO FIELD IN COLUMNS I3 THRU I4 AND
                            BLANK THE FORMER FIELD
                            (I4 MAY BE OMITTED)
    S   I1 I2 I3 I4          SWAP FIELD IN COLUMNS I1 THRU I2
                            WITH FIELD IN COLUMNS I3 THRU I4.
                            (I4 MAY BE OMITTED)

AUTHORS
    SHARON E GOOD   - NSRDC CODE 1892.1
    DAVID V SOMMER - NSRDC CODE 1892.2

DATE WRITTEN: 12/72

DATE(S) REVISED
    07/16/75

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:  UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:  UTILITY
```

PROGRAM 'CARDS2'

PURPOSE
    REPRODUCE A BCD DECK WITH MODIFICATIONS. (FIELDS MAY BE
    COPIED, MOVED, DELETED, INTERCHANGED, GANG PUNCHED AND/OR
    SEQUENCED.)

    FUNCTIONAL CATEGORY: 01

REMARKS
    1) UP TO 10 FIELDS MAY BE COPIED
    2) UP TO 10 FIELDS MAY BE INTERCHANGED
    3) UP TO 10 FIELDS MAY BE MOVED AND REPLACED BY BLANKS
    4) UP TO 10 FIELDS MAY BE DELETED
    5) GANG PUNCHING OF UP TO 65 COLUMNS MAY BE INSERTED
       IN A FIXED FIELD
    6) SEQUENCING MAY BE PERFORMED IN A FIELD OF UP TO
       10 COLUMNS
    7) OPTIONS ARE PERFORMED IN THE FOLLOWING ORDER:
       A) ALL COPIES, IN THE ORDER READ
       B) ALL DELETES, IN THE ORDER READ
       C) SEQUENCING
       D) ALL GANGPUNCHING, IN THE ORDER READ
       E) ALL MOVES, IN THE ORDER READ
       F) ALL SWAPS, IN THE ORDER READ

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM   DATE   FILESQ   GET   IFETCH
        MOVLEV   OPENM   RECOVR   SHIFT   TIME
    OTHERS
        EOJ   - ABNORMAL TERMINATION ROUTINE
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        IFMT10 - FAST I10-FORMAT ENCODE
        IOPEN   - TEST FOR RM FILE OPEN
        REDUCE - REDUCE CORE TO MINIMUM NEEDED TO RUN
        REPLAC - REPLACE ONE CHARACTER BY ANOTHER
        VALID   - VALIDATE FIELD CONTROL CARDS
        VFILL   - FILL ARRAY WITH WORD

ARITHMETIC STATEMENT FUNCTIONS
    FAST I-FORMAT DECODES
        I33FMT   I34FMT   I37FMT   I310FMT
    FAST L-FORMAT DECODES (LEFT-ADJ, ZERO-FILLED)
        L1FMT   L11FMT

LANGUAGE: FORTRAN IV

INPUT/OUTPUT UNITS
    FORTRAN   LOCAL
    LOGICAL   FILE
    U N I T   NAME   USE
    -------   -------   --
                DEK   DECK TO BE REPRODUCED
                FCC   FIELD CONTROL CARDS
                OUTPUT   LISTABLE OUTPUT
                PUNCH   PUNCHED OUTPUT

```
EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        LDSET,LIB=UTILITY.
        CARDS2,INPUT,INPUT.
        '   7/8/9     EOR
            (FIELD CONTROL CARDS)
            (BLANK CARD OR 7/8/9)
            (DECK TO BE REPRODUCED)
        "   6/7/8/9   EOF

    FROM TTY
        ATTACH,FCC,....        (FIELD CONTROL CARDS)
        ATTACH,DEK,....        (DECK TO BE REPRODUCED)
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        CARDS2,,,OUT.
        DISPOSE,OUT,PR=KYY.
        DISPOSE,PUNCH,PU=KYY.

    EXECUTE CARD PARAMETERS
        CARDS2,FCC,DEK,OUTPUT,PUNCH,OPTION.
            FCC      - INPUT FILE OF FIELD CONTROL CARDS
            DEK      - INPUT FILE OF DECK TO BE REPRODUCED
                       (MAY BE SAME AS FCC)
            OUTPUT   - LISTABLE OUTPUT
            PUNCH    - PUNCHED OUTPUT
            OPTION   - OUTPUT OPTION
                       OMITTED OR 'ALL' - LIST AND PUNCH
                       'LIST'           - LIST ONLY
                       'PUNCH'          - PUNCH ONLY
                       ANYTHING ELSE    - NO LIST OR PUNCH
                                          (FIELD CARDS CHECKED)

    DEFAULT EXECUTE CARD
        CARDS2,FCC,DEK,OUTPUT,PUNCH,ALL.

    FL NEEDED TO LOAD: 32000B
        (PROGRAM REDUCES TO MINIMUM NEEDED TO RUN)
```

DATA CARDS
    ONE OR MORE FIELD CONTROL CARDS FOLLOWED BY A BLANK CARD
    (OR 7/8/9 END-OF-RECORD). DECK TO BE REPRODUCED MAY
    FOLLOW OR BE IN A SEPARATE FILE.

    FIELD CONTROL CARDS
        COL   CONTENTS
        -----   --------
         1   TYPE OF MODIFICATION
                C - COPY
                D - DELETE
                E - ENDPUNCH (SEQUENCE)
                G - GANG PUNCH
                M - MOVE AND BLANK FORMER FIELD
                S - SWAP (INTERCHANGE)
        2-3   BLANK
        4-15   UP TO FOUR (4) 3-COLUMN INTEGER PARAMETERS
                (I1 I2 I3 I4)
        16-80   ALPHAMERIC TEXT FIELD, LEFT-JUSTIFIED

    MODIFICATION TYPES
        C   I1 I2 I3   COPY FIELD IN COLUMNS I1 THRU I2
                                INTO FIELD STARTING AT I3. RETAIN
                                THE FORMER FIELD.
        D   I1 I2   DELETE COLUMNS I1 THRU I2 AND
                                REPLACE WITH BLANKS.
        E   I1 I2 I3 I4   PUT SEQUENTIAL NUMBERS INTO
                                COLUMNS I1 THRU I2, RIGHT-
                                JUSTIFIED, ZERO-FILLED, BEGINNING
                                WITH I3, INCREMENTING BY I4.
        G   I1 I2   TEXT... REPLACE COLUMNS I1 THRU I2 WITH
                                THE SPECIFIED TEXT FIELD.
                                (DEFAULT: G   73 76)
        M   I1 I2 I3   MOVE FIELD IN COLUMNS I1 THRU I2
                                TO FIELD STARTING IN I3. BLANK
                                THE FORMER FIELD.
        S   I1 I2 I3   SWAP FIELD IN COLUMNS I1 THRU I2
                                WITH FIELD STARTING IN I3.

    NOTE: IN ALL CASES, I2 MAY NOT BE LESS THAN I1.

AUTHOR
    DAVID V SOMMER - NSRDC CODE 1892.2
                        (BASED ON PROGRAM 'CARDS' BY SHARON E GOOD)

DATE WRITTEN: 07/21/75

DATE(S) REVISED
    11/10/75
    10/04/76 - CORRECT D/G OPTIONS REQUIRING I3 FIELD

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'CCRM'

PURPOSE
    EXTRACT ALL PAGES FROM COMPUTER CENTER REFERENCE MANUAL
    WHICH WERE MODIFIED AFTER USER-SPECIFIED DATE

FUNCTIONAL CATEGORIES: 01

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    THE TTLE PAGE AND THE 'R' PAGES ARE ALWAYS PRINTED.

EXECUTION
    FROM BATCH
        BEGIN,UTILITY,,CCRM,MONTH,YEAR.

    FROM TTY
        BEGIN,UTILITY,,CCRM,MONTH,YEAR,OUT.
        ROUTE,OUT,DC=PR,....

    EXECUTE CARD PARAMETERS
        CCRM,OUTPUT,MONTH,YEAR,PM.
            OUTPUT   - LISTABLE OUTPUT
            MONTH   - FIRST 3-4 CHARACTERS OF MONTH (E.G., JAN,
                        FEB, ETC.) OR THE APPROPRIATE DIGITS
                        (1-12)
            YEAR   - 2 OR 4 DIGITS OF YEAR (E.G., 76, 1976)
                        (ALL PAGES MODIFIED AFTER MONTH,YEAR WILL BE
                        PRINTED)
            PM   - OMITTED OR 'NOPM' - DO NOT PUT 'PM'
                                            MESSAGES AT START AND
                                            END OF OUTPUT
                        'C'   - PRINT CENTERED ON WIDE
                                          PAGE. NO 'PM' MSGS.
                        ANYTHING ELSE   - PUT THE MESSAGE
                                           'PM 1-PART NARROW
                                            UNLINED PAPER'
                                          AT START OF OUTPUT AND
                                           'PM RESTORE PRINTER'
                                          AT THE END
                        USE ONLY FOR TERMINALS WHICH WILL SUPPORT
                        'PM' MESSAGES

    DEFAULT EXECUTE CARD
        CCRM,OUTPUT,0,0,NOPM.
            (WILL PRINT ENTIRE MANUAL BUT IS NOT EFFICIENT)

    FL NEEDED TO LOAD: 30000B
    FL NEEDED TO RUN : 20000B

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   ---
              OUTPUT   LISTABLE OUTPUT
              ZZZCCRM   COMPUTER CENTER REFERENCE MANUAL
                        (ATTACHED AND RETURNED BY PROGRAM)

EXAMPLES
    TO PRINT ALL PAGES MODIFIED AFTER MARCH, 1976 (REVISIONS
    4, 5, ...):
        CCRM,,MAR,76.

    TO PRINT ALL PAGES MODIFIED IN REVISION 5 ON (REVISION 4
    DATE IS JULY, 1976):
        CCRM,,7,1976.

    TO PRINT ALL PAGES MODIFIED SINCE THE MANUAL WAS PRINTED:
        CCRM,,SEPT,75.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   CLOSEM   FILESQ   GET   IFETCH
        OPENM   RECOVR   REMARK   SHIFT
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        FINDWRD - SEARCH ARRAY FOR WORD
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        IFMTV   - FAST VARIABLE I-FORMAT DECODE
        ZPFUNC - ATTACH COMPUTER CENTER REFERENCE MANUAL

ARITHMETIC STATEMENT FUNCTIONS
    FAST I-FORMAT DECODE
        I23FMT
    FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
        L11FMT   L36FMT   L61FMT   L81FMT

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 10/13/76

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'COPYEXT'

PURPOSE
    COPY UNIT RECORDS (ZERO BYTE TERMINATED) EXTRACTING
    SPECIFIED COLUMNS AND OPTIONALLY MOVING THEM AND OPTIONALLY
    ADD EDITOR SEQUENCING

FUNCTIONAL CATEGORIES: 01   M4

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    DEFAULT IS TO COPY FIRST 72 COLUMNS.

EXECUTION
    FROM BATCH
        ATTACH,TAPE1,....   (FILE TO BE COPIED)
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        COPYEXT,,,<PARAMETERS>.
        (DO SOMETHING WITH TAPE2)

    FROM TTY
        ATTACH,TAPE1,....   (FILE TO BE COPIED)
        BEGIN,UTILITY,,COPYEXT,,,<PARAMETERS>.
        (DO SOMETHING WITH TAPE2)

    EXECUTE CARD PARAMETERS
        COPYEXT,INFILE,OUTFILE,REW,FROM,TO,AT,EDITSEQ,START,INCR,
        OUTPUT.
            INFILE   - INPUT FILE TO BE COPIED
            OUTFILE - OUTPUT FILE   (NOT REWOUND)
            REW   - INFILE REWIND OPTION
                       A   - REWIND AFTER USE
                       B   - REWIND BEFORE USE
                       R   - REWIND BEFORE AND AFTER USE
                       U   - REWIND BEFORE, REWIND AND UNLOAD
                                 AFTER USE
                       OTHER - NO REWIND (DEFAULT)
                       (ANY WORDS BEGINNING WITH THESE LETTERS
                       WILL PRODUCE THE SAME RESULTS)
            FROM   - STARTING COLUMN FOR EXTRACTING
                       (1-140; DEFAULT: 1)
            TO   - ENDING COLUMN FOR EXTRACTING
                       (1-140; DEFAULT: 72)
            AT   - FIRST COLUMN IN OUTFILE FOR EXTRACTED
                       RECORD (1-140; DEFAULT: 1)
            EDITSEQ - EDITOR SEQUENCING OPTION
                       'E'   - ADD EDITOR SEQUENCING
                       ANYTHING ELSE - NO EDITOR SEQUENCING
            START   - STARTING SEQUENCE NUMBER
                       (DEFAULT: 100)
            INCR   - SEQUENCING INCREMENT
                       (DEFAULT: 10)
            OUTPUT   - LISTABLE OUTPUT (FTN ERROR MESSAGES)

    DEFAULT EXECUTE CARD
        COPYEXT,TAPE1,TAPE2,NOREW,1,72,1,NOEDSEQ,100,1,OUTPUT.

DEFAULT PL: 5000 LINES

FL NEEDED TO LOAD: 30000B
FL NEEDED TO RUN : 20000B

ERROR MESSAGES
    CANNOT COPY ALL CHARACTERS
        THE SPECIFIED FIELD (FROM THRU TO) WILL NOT FIT IN
        OUTFILE STARTING AT COLUMN AT. ONLY 141-AT COLUMNS
        WILL BE MOVED.
    FROM GT TO
        NEGATIVE FIELD SIZE NOT VALID - JOB TERMINATED
    INCR INVALID - 10 USED
        USER SPECIFIED A NON-POSITIVE-INTEGER FOR EDITOR
        SEQUENCING INCREMENT. DEFAULT OF 10 IS USED.
    INPUT FILE EMPTY
        INPUT FILE AT EOI -- JOB TERMINATED
        IF REW=B, R OR U WAS SPECIFIED, FILE HAS NO INFORMATION
        IN IT.
    START INVALID - 100 USED
        USER SPECIFIED A NON-POSITIVE-INTEGER FOR STARTING EDITOR
        SEQUENCE NUMBER. DEFAULT OF 100 USED.

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   ---
                OUTPUT   FTN ERROR MESSAGES
                TAPE1   INPUT FILE TO BE COPIED
                TAPE2   OUTPUT FILE (NOT REWOUND)
                DAYFILE   PROGRAM ERROR MESSAGES

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM   FILESQ   GET   IFETCH   MAXO
        MINO   OPENM   PUT   REMARK   WEOR
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        IFMTV   - FAST VARIABLE I-FORMAT DECODE
        LASTC   - FIND LAST NON-BLANK CHARACTER
        MOVSTR - MOVE CHARACTER STRING
        SETREW - DECODE REWIND OPTION
        VFILL   - FILL ARRAY WITH WORD

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 02/25/77

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT

PROGRAM 'COPYLIB'

PURPOSE
    FROM AN EDITLIB LISTLIB LISTING, CREATE SORTED (OR UNSORTED)
    DIRECTIVES TO COPY AN EDITLIB USER LIBRARY

FUNCTIONAL CATEGORY: K3

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    FOR EDITLIB SYSTEM LIBRARIES, USE PROGRAM USYSLIB.

EXECUTION
    FROM BATCH AND TTY
        USE PUBLIC PROCEDURE 'COPYLIB'.

    EXECUTE CARD PARAMETERS
        COPYLIB,INFILE,LIBDIR,NEWLIB,SORT,OUTPUT.
            INFILE - INPUT FILE CONTAINING EDITLIB LISTLIB LIST
            LIBDIR - OUTPUT FILE CONTAINING THE UPDATE
                      DIRECTIVES
            NEWLIB - LFN OF NEW LIBRARY
            SORT   - OMITTED OR 'SORT' - SORT ROUTINE NAMES
                      ANYTHING ELSE   - DO NOT SORT
            OUTPUT - FTN ERROR MESSAGES

    DEFAULT EXECUTE CARD
        COPYLIB,TAPE1,LIBDIR,NEWLIB,SORT,OUTPUT.

    FL NEEDED TO LOAD: 35000B
    FL NEEDED TO RUN : 25000B
        (PROGRAM ADJUSTS CORE AS REQUIRED)

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   --------   --
              LIBDIR   OUTPUT FILE CONTAINING EDITLIB
                         DIRECTIVES
              NEWLIB   FILE TO CONTAIN NEW LIBRARY
                         (PF SPACE IS OBTAINED BUT NOTHING IS
                         WRITTEN ON THE FILE)
              OUTPUT   LISTABLE OUTPUT (FTN ERROR MESSAGES)
      1   TAPE1   INPUT FILE CONTAINING EDITLIB LISTLIB
                         LISTING

```
SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM      FILESQ      GET         IFETCH      MOVLEV
        OPENM       PUT         REMARK
    OTHERS
        ASORTMV - SORT ARRAY USING MOVLEV
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        LEFTADJ - SQUEEZE LEFT AND REMOVE BLANKS AND 00B
        MOVSTR  - MOVE A STRING OF CHARACTERS
        PUTCHA  - INSERT A CHARACTER INTO AN ARRAY
        REDUCE  - ADJUST CORE UP AND DOWN
        REPLAC  - REPLACW ONE CHARACTER WITH ANOTHER
        REQUEST - REQUEST,NEWLIB,*PF.

ARITHMETIC STATEMENT FUNCTIONS
    FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
        L11FMT      L61FMT      L81FMT
    FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
        R110FMT    R47FMT

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 11/15/76

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:     UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'COPYRE'

PURPOSE
    COPY AND REARRANGE FILE OF ZERO BYTE TERMINATED RECORDS
    (150 CHARACTERS MAXIMUM PER RECORD)

FUNCTIONAL CATEGORY: 01 K1

REMARKS
    NONE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM   EOF   FILESQ   GET   IFETCH
        MOVLEV   OPENM   PUT   RECOVR   REMARK
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        FTNRFL - GET CURRENT FIELD LENGTH
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        LASTC   - FIND LAST NON-BLANK CHARACTER
        REDUCE - ADJUST CORE AS REQUIRED
        SETREW - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
    NONE

LANGUAGE: FORTRAN IV

METHOD
    1. READ RANGE CARDS.
    2. READ INPUT FILE INTO CORE.
    3. VERIFY AND LIST RANGES.
    4. IF ALL RANGES VALID, COPY FILE AS REQUESTED.

INPUT/OUTPUT UNITS
    UNIT_# __LEN__ -----------------------USE-------------------
            INPUT   RANGE CARDS INPUT FILE
            OUTPUT LISTABLE OUTPUT
            TAPE1   FILE TO BE COPIED AND RE-ARRANGED
            TAPE2   OUTPUT (RE-ARRANGED) FILE

EXECUTION
    FROM BATCH
        ATTACH,TAPE1,....   (FILE TO BE COPIED AND RE-ARRANGED)
        REQUEST,TAPE2,*PF.
        BEGIN,UTILITY,,COPYRE.
        CATALOG,TAPE2,....
        7/8/9   EOR
            (RANGE CARDS. END WITH 0,0)
        6/7/8/9

    FROM TTY
        ATTACH,TAPE1,....   (FILE TO BE COPIED AND RE-ARRANGED)
        CONNECT,INPUT,OUTPUT.
        REQUEST,TAPE2,*PF.
        BEGIN,UTILITY,,COPYRE.
            (ENTER RANGES - THERE IS NO PROMPTING - END WITH 0,0)
        CATALOG,TAPE2,....

EXECUTE CARD PARAMETERS
    COPYRE,INPUT,INFILE,OUTFILE,REW,OUTPUT.
        INPUT   - RANGE CARD INPUT FILE
        INFILE   - FILE TO BE COPIED AND RE-ARRANGED
        OUTFILE - OUTPUT (RE-ARRANGED) FILE
        REW   - INFILE REWIND OPTION
                A   - REWIND AFTER USE
                B   - REWIND BEFORE USE
                R   - REWIND BEFORE AND AFTER USE
                U   - REWIND BEFORE, REWIND AND UNLOAD
                         AFTER USE (IF ABEND, U IS CHANGED
                         TO R)
                OTHER - NO REWIND (DEFAULT)
                (ANY WORDS BEGINNING WITH THESE LETTERS WILL
                PRODUCE THE SAME RESULTS.)
        OUTPUT   - LISTABLE OUTPUT

    DEFAULT EXECUTE CARD
        COPYRE,INPUT,TAPE1,TAPE2,NOREW,OUTPUT.

    FL NEEDED TO LOAD: 32000B
    FL NEEDED TO RUN : 22000B
        (PROGRAM ADJUSTS CORE UP AND DOWN AS REQUIRED)

DATA CARDS
    RANGE SPECIFICATION CARDS ARE FREE-FORM. EACH CARD MUST
    CONTAIN TWO (2) NUMBERS, EVEN IF THE SECOND IS 0, SEPARATED
    BY A COMMA (,).
    THE FIRST NUMBER IS THE STARTING RECORD NUMBER.
    THE SECOND NUMBER IS THE ENDING RECORD NUMBER.
    IF R1 GT R2, PROGRAM ABORTS.
    IF R1 GT MAXIMUM NUMBER OF RECORDS IN INFILE,
    PROGRAM ABORTS.
    IF R2 GT MAXIMUM NUMBER OF RECORDS IN INFILE, THE MAXIMUM
    NUMBER IS SUBSTITUTED.
    IF R2 IS 0, R1 IS SUBSTITUTED.
    IF R1 IS 0, IT SIGNALS THE END OF THE RANGE CARDS.
    END RANGE CARDS WITH 0,0.

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 03/30/76

DATE(S) REVISED
    04/02/76
    04/26/76
    05/20/76 - INCREASE TO 150 CHARACTER RECORDS

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'COPYSEL'

PURPOSE
    COPY AND REARRANGE FILE OF ZERO BYTE TERMINATED RECORDS
    (150 CHARACTERS MAXIMUM PER RECORD; FILE PROCESSED DIRECTLY)

FUNCTIONAL CATEGORY: 01 K1

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    'COPYSEL' IS SIMILAR TO 'COPYRE'. 'COPYSEL' WORKS DIRECTLY
    WITH INFILE; 'COPYRE' READS THE ENTIRE FILE INTO CORE FIRST.
    USE 'COPYSEL' IF INFILE IS TO BE PROCESSED, FOR THE MOST
    PART, IN THE FORWARD DIRECTION. USE 'COPYRE' IF THERE IS A
    MUCH RE-ARRANGING TO BE DONE. USE 'COPYSEL' IF INFILE IS
    TOO LARGE FOR 'COPYRE'.

EXECUTION
    FROM BATCH
        ATTACH,TAPE1,....   (FILE TO BE COPIED AND RE-ARRANGED)
        ATTACH,UTILITY.
        REQUEST,TAPE2,*PF.
        LDSET,LIB=UTILITY.
        COPYSEL.
        CATALOG,TAPE2,....
        *   7/8/9   EOR
           (RANGE CARDS. END WITH 0,0)
        **   6/7/8/9   EOF

    FROM TTY
        ATTACH,TAPE1,....   (FILE TO BE COPIED AND RE-ARRANGED)
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        DISCONT,OUTPUT.
        REQUEST,TAPE2,*PF.
        COPYSEL.
           (ENTER RANGES - THERE IS NO PROMPTING - END WITH 0,0)
        ROUTE,OUTPUT,DC=PR,....
        CATALOG,TAPE2,....

    EXECUTE CARD PARAMETERS
        COPYSEL,INPUT,INFILE,OUTFILE,REW,OUTPUT.
            INPUT   - RANGE CARD INPUT FILE
            INFILE - FILE TO BE COPIED AND RE-ARRANGED
            OUTFILE - OUTPUT (RE-ARRANGED) FILE
            REW   - INFILE REWIND OPTION
                    A   - REWIND AFTER USE
                    B   - REWIND BEFORE USE
                    R   - REWIND BEFORE AND AFTER USE
                    U   - REWIND BEFORE, REWIND AND UNLOAD
                            AFTER USE (IF ABEND, U IS CHANGED
                            TO R)
                    OTHER - NO REWIND (DEFAULT)
                    (ANY WORDS BEGINNING WITH THESE LETTERS WILL
                    PRODUCE THE SAME RESULTS.)
            OUTPUT - LISTABLE OUTPUT

```
DEFAULT EXECUTE CARD
    COPYSEL,INPUT,TAPE1,TAPE2,NOREW,OUTPUT.

FL NEEDED TO LOAD: 32000B
FL NEEDED TO RUN : 22000B
```

DATA CARDS
    RANGE SPECIFICATION CARDS ARE FREE-FORM. EACH CARD MUST
    CONTAIN TWO (2) NUMBERS, EVEN IF THE SECOND IS 0, SEPARATED
    BY A COMMA (,).
    THE FIRST NUMBER IS THE STARTING RECORD NUMBER.
    THE SECOND NUMBER IS THE ENDING RECORD NUMBER.
    IF R1 GT R2, PROGRAM ABORTS.
    IF R1 GT MAXIMUM NUMBER OF RECORDS IN INFILE,
    PROGRAM ABORTS.
    IF R2 GT MAXIMUM NUMBER OF RECORDS IN INFILE, INFILE IS
    COPIED TO END-OF-FILE.
    IF R2 LT 0, INFILE IS COPIED TO END-OF-FILE.
    IF R2 IS 0, R1 IS SUBSTITUTED.
    IF R1 IS 0, IT SIGNALS THE END OF THE RANGE CARDS.
    END RANGE CARDS WITH 0,0.

ERROR MESSAGES
    INPUT FILE EMPTY
        INPUT FILE IS EMPTY OF NOT REWOUND

INPUT/OUTPUT UNITS

UNIT #	LFN	USE
	DAYFILE	ERROR MESSAGE IF INPUT FILE EMPTY
	INPUT	RANGE CARDS INPUT FILE
	OUTPUT	LISTABLE OUTPUT
	TAPE1	FILE TO BE COPIED AND RE-ARRANGED
	TAPE2	OUTPUT (RE-ARRANGED) FILE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM   DATE   EOF   FILESQ   GET
        IFETCH   OPENM   PUT   RECOVR   REMARK
        REWND   SKIP   TIME
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        LASTC   - FIND LAST NON-BLANK CHARACTER
        SETREW - DECODE REWIND OPTION

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 04/27/76

DATE(S) REVISED
    05/20/76 - V1.1 - RECORD LENGTH CHANGED TO 150 CHARACTERS
    07/28/77 - V1.2 - SHORTEN OUTPUT SUMMARY

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'CV29'

PURPOSE
    CONVERT TO 029 PUNCH CODE

FUNCTIONAL CATEGORIES: J1   M2   O1

LANGUAGE: FORTRAN IV AND CDC 6000 COMPASS

REMARKS
    OUTPUT FILE TO BE PUNCHED IS 'TAPE1'.   THE USER MAY NOT
    CHANGE IT.   'TAPE1' IS NOT REWOUND.

EXECUTION
    FROM BATCH AND TTY
        ATTACH,ANY,....   (FILE TO BE CONVERTED)
        REQUEST,TAPE1,*Q.
        BEGIN,UTILITY,,CV29,ANY.
        DISPOSE,TAPE1,P8=XYY.

    EXECUTE CARD PARAMETERS
        CV29,INFILE,,OUTPUT.
            INFILE - FILE TO BE CONVERTED
            OUTPUT - LISTABLE OUTPUT

    DEFAULT EXECUTE CARD
        CV29,INPUT,,OUTPUT.

    FL NEEDED TO LOAD: 24000B

INPUT/OUTPUT UNITS
    UNIT__#   __LEN__   -------------------USE-------------------
        5   INPUT   INPUT FILE
               OUTPUT   LIST NUMBER OF CARDS PUNCHED
               TAPE1   OUTPUT FILE TO BE PUNCHED
               DAYFILE   NUMBER OF CARDS PROCESSED

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        REMARK
    OTHERS
        CONVCB   WPRU

AUTHORS
    ? - ORIGINAL AUTHOR
    SHARON E GOOD - DTNSRDC CODE 1892.2

DATE WRITTEN: / /7

DATE(S) REVISED
    10/10/75

LOCATION OF DECKS
    SOURCE
        CODE 1892
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'DECK'

PURPOSE
    LIST UPDATE 'SOURCE' FILE DECK/COMDECK NAMES, SEQUENCE
    NUMBER AND NUMBER OF CARDS

    FUNCTIONAL CATEGORY: Q7

REMARKS
    NUMBER OF RECORDS DOES NOT INCLUDE *DECK/*COMDECK CARDS.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   CLOSEM   DATE   FILESQ   GET
        IFETCH   MOD   MOVLEV   OPENM   OR
        RECOVR   REMARK   SHIFT   TIME
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        ADJL   - SQUEEZE LEFT (ENGLISH WORDS)
        CENTER - CENTER PHRASE IN LINE
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        LASTC   - FIND LAST NON-BLANK CHARACTER IN STRING
        PAKLFT - SQUEEZE LEFT AND REMOVE BLANKS AND 00B
        SETREW - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
    FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
        L11FMT   L51FMT   L81FMT   L97FMT   L910FMT
    FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
        R16FMT   R19FMT

LANGUAGE: FORTRAN IV

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   ---
                OUTPUT   LISTABLE OUTPUT
                TAPE1   INPUT UPDATE 'SOURCE' FILE
                DAYFILE   TOTALS ARE PUT INTO DAYFILE

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        ATTACH,TAPE1,....   (UPDATE 'SOURCE' FILE)
        LDSET,LIB=UTILITY.
        DECK.

    FROM TTY
        ATTACH,UTILITY.
        ATTACH,TAPE1,....   (UPDATE 'SOURCE' FILE)
        LIBRARY,UTILITY.
        DECK,,OUT.
        ROUTE,OUT,DC=PR,....

```
EXECUTE CARD PARAMETERS
    DECK,INFILE,OUTPUT,REW,LIB,PD,ID.
        INFILE  - INPUT FILE (UPDATE 'SOURCE' FILE)
        OUTPUT  - LISTABLE OUTPUT
        REW     - INFILE REWIND OPTION
                    A     - REWIND AFTER USE
                    B     - REWIND BEFORE USE
                    R     - REWIND BEFORE AND AFTER USE
                    U     - REWIND BEFORE, REWIND AND UNLOAD
                            AFTER USE
                  OTHER - NO REWIND (DEFAULT)
                  (ANY WORDS BEGINNING WITH THESE LETTERS WILL
                  PRODUCE THE SAME RESULTS)
        LIB     - (FIRST PART OF) PFN
                  (IF OMITTED, HEADING IS: "LFN: INFILE")
        PD      - SECOND PART OF PFN
                    D       - LIB_DOCUMENTATION
                    P       - LIB_PL
                  OMITTED - LIB
                  OTHER   - LIB_PD
        ID      - ID UNDER WHICH LIB_PD IS CATALOGED
                  (IF OMITTED, NO ID IN HEADING)

    DEFAULT EXECUTE CARD
        DECK,TAPE1,OUTPUT,NOREW.

    FL NEEDED TO LOAD: 34000B
    FL NEEDED TO RUN : 21000B
        (PROGRAM ADJUSTS CORE AS REQUIRED)

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 05/04/73

DATE(S) REVISED
    03/07/75
    10/07/75 - CHANGE TO RECORD MANAGER
               (SAVES ABOUT 30 PCT CP TIME)
    01/23/76 - V2.0 - REWRITTEN TO CUT PRINTOUT IN HALF
               (SAME FORM OUTPUT AS 'DECKLST')
    02/02/76 - V2.1
    05/04/76 - V2.2 - ADD OPTIONAL USER HEADING
    06/10/76 - V2.3 - ADD SEARCH FOR *DECK, AND *COMDECK,

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:    UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'DECKLST'

PURPOSE
    LIST UPDATE 'SOURCE' FILE DECK/COMDECK NAMES, SEQUENCE
    NUMBER, NUMBER OF CARDS, NUMBER OF LINES AND PAGES (IF
    COLUMN 1 CARRIAGE CONTROL IS USED).

    (LIST CONTENTS OF A DOCUMENTATION FILE)

    FUNCTIONAL CATEGORY: 07

REMARKS
    NUMBER OF CARDS DOES NOT INCLUDE *DECK/*COMDECK CARDS.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   CLOSEM   DATE   FILESQ   GET
        IFETCH   MOD   MOVLEV   OPENM   OR
        RECOVR   REMARK   SHIFT   TIME
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        ADJL   - SQUEEZE LEFT (ENGLISH WORDS)
        CENTER - CENTER PHRASE IN LINE
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        LASTC   - FIND LAST NON-BLANK CHARACTER IN STRING
        PAKLFT - SQUEEZE LEFT AND REMOVE BLANKS AND 00B
        SETREW - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
    FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
        L11FMT   L51FMT   L81FMT   L97FMT   L910FMT
    FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
        R16FMT   R19FMT

LANGUAGE: FORTRAN IV

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   --
                OUTPUT   LISTABLE OUTPUT
                TAPE1   INPUT DOCUMENT FILE
                DAYFILE   TOTALS ARE PUT INTO DAYFILE

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        ATTACH,TAPE1,....   (DOCUMENT FILE)
        LDSET,LIB=UTILITY.
        DECKLST.

    FROM TTY
        ATTACH,UTILITY.
        ATTACH,TAPE1,....   (DOCUMENT FILE)
        LIBRARY,UTILITY.
        DECKLST,,OJT.
        ROUTE,OUT,DC=PR,....

```
EXECUTE CARD PARAMETERS
    DECKLST,INFILE,OUTPUT,REW,LIB,PD,ID.
        INFILE  - INPUT FILE (DOCUMENT FILE)
        OUTPUT  - LISTABLE OUTPUT
        REW     - INFILE REWIND OPTION
            A       - REWIND AFTER USE
            B       - REWIND BEFORE USE
            R       - REWIND BEFORE AND AFTER USE
            U       - REWIND BEFORE, REWIND AND UNLOAD
                      AFTER USE
            OTHER - NO REWIND (DEFAULT)
            (ANY WORDS BEGINNING WITH THESE LETTERS WILL
            PRODUCE THE SAME RESULTS)
        LIB     - (FIRST PART OF) PFN
                  (IF OMITTED, HEADING IS: "LFN: INFILE")
        PD      - SECOND PART OF PFN
            D           - LIB_DOCUMENTATION
            P           - LIB_PL
            OMITTED - LIB
            OTHER   - LIB_PD
        ID      - ID UNDER WHICH LIB_PD IS CATALOGED
                  (IF OMITTED, NO ID IN HEADING)

    DEFAULT EXECUTE CARD
        DECKLST,TAPE1,OUTPUT,NOREW.

    FL NEEDED TO LOAD: 27000B
    FL NEEDED TO RUN : 20000B

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 02/20/74

DATE(S) REVISED
    11/11/75 - V2.0 - CONVERTED TO RECORD MANAGER CALLS
    01/23/76 - V2.1
    02/02/76 - V2.2
    05/05/76 - V2.3 - ADD OPTIONAL USER HEADING
    06/10/76 - V2.4 - ADD SEARCH FOR *DECK, AND *COMDECK,

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:   UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:   UTILITY
```

PROGRAM 'DEKSORT'

PURPOSE
    SORT IDENT AND DECK LISTINGS FROM UPDATE OUTPUT FILE

FUNCTIONAL CATEGORIES: Q7 M1

REMARKS
    NONE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   EOF   MOD   MOVLEV   SHIFT
        SYSTEM
    PART OF PROGRAM
        FILL   - EXTRACT IDENT AND DECK NAMES
        HANDLE   - FIND IDENT AND DECK NAMES
        SORTPRT   - CALL SORT AND PRINT SORTED DATA
    OTHERS
        GETLFNS   - GET ACTUAL LOCAL FILE NAMES
        PAKLFT   - SQUEEZE LEFT AND REMOVE BLANKS
        REDUCE   - ADJUST FIELD LENGTH
        SSORTL   - FTN LOGICAL SHELL SORT
        ZBLANK   - CHANGE BLANKS TO 00B AND VICE VERSA

ARITHMETIC STATEMENT FUNCTIONS
    L11FMT   - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
    NROWS   - COMPUTE NUMBER OF ROWS IN PRINTOUT

LANGUAGE: FORTRAN IV

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   ---
      1   TAPE1   INPUT FILE (UPDATE OUTPUT LISTING FROM
                            O PARAMETER)
                INPUT   OPTIONAL INPUT FILE FOR 40-CHAR TITLE
                OUTPUT   LISTABLE OUTPUT

EXECUTION
    FROM BATCH
        ATTACH,OLDPL,....   (UPDATE LIBRARY TO BE LISTED)
        UPDATE,P,C=0,O=ANY.
        BEGIN,UTILITY,,DEKSORT,ANY,....

    FROM TTY
        ATTACH,OLDPL,....   (UPDATE LIBRARY TO BE LISTED)
        UPDATE,P,C=0,O=ANY.
        BEGIN,UTILITY,,DEKSORT,ANY,OUT,....
        ROUTE,OUT,DC=PR,....

EXECUTE CARD PARAMETERS
    DEKSORT,INFILE,OUTPUT,OLD,PL,ID,INPUT.
        INFILE - INPUT FILE (UPDATE LISTING)
        OUTPUT - LISTABLE OUTPUT
        OLD   - IF 0, READ 40-CHARACTER TITLE FROM 'INPUT'
                  IF ANYTHING ELSE, OLD AND PL ARE PFN OF
                  UPDATE LIBRARY BEING LISTED (OLD AND PL ARE
                  EACH 0-7 CHARACTERS)
                  (DEFAULT: OLD)
        PL   - SECOND HALF OF PFN (IF OLD NE 0)
                  (DEFAULT: PL)
        ID   - ID UPDATE LIBRARY IS CATALOGED UNDER
                  (IF OLD NE 0)
                  (IF OMITTED, ID IS NOT PUT INTO HEADING)
        INPUT   - IF OLD=0, THIS FILE CONTAINS UP TO 1
                  CARD CONTAINING A 40-CHARACTER TITLE.

    NOTE: IF LFN IS 0, THE HEADING WILL CONTAIN THE 40
          CHARACTERS READ FROM 'INPUT'.
          IF OLD, PL, ID OMITTED, HEADING WILL CONTAIN
          'OLDPL'.
          IF OLD, PL OMITTED AND ID IS CXXX, HEADING WILL
          CONTAIN 'OLDPL,ID=CXXX'.
          ETC.

DEFAULT EXECUTE CARD
    DEKSORT,TAPE1,OUTPUT.

FL NEEDED TO LOAD: 26000B
FL NEEDED TO RUN : 16000B + TABLE SPACE (ABOUT 1 WORD PER
                                        IDENT AND DECK NAME)
    (PROGRAM ADJUSTS CORE AS REQUIRED)

AUTHOR
    S. DERRY - NSWC, DAHLGREN, VA.
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 08/12/75 - SD

DATE(S) REVISED
    06/09/76 - DVS - INPUT MODIFIED TO ALLOW INFO IN EXEC CARD,
                     EXPAND HEADING, STREAMLINE PRINTOUT,
                     PUT LARGE ARRAY IN BLANK COMMON (TO REDUCE
                     ABSOLUTE DECK SIZE AND LOADING FL) AND GET
                     CORE FOR NAME TABLE DYNAMICALLY TO REDUCE
                     CORE REQUIREMENT AND ELIMINATE TABLE
                     OVERFLOW.

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'DFDATIM'

PURPOSE
    PUT DATE/TIME INTO DAYFILE

FUNCTIONAL CATEGORY: Q0

LANGUAGE: CDC 6000 CP COMPASS

REMARKS
    NONE

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        LDSET,LIB=UTILITY.   OR   LIBRARY,UTILITY.
        DFDATIM.

    FROM TTY
        BEGIN,UTILITY,,DFDATIM.

    EXECUTE CARD PARAMETERS
        DFDATIM.

    DEFAULT EXECUTE CARD
        DFDATIM.

    FL NEEDED TO LOAD: 11000B
    FL NEEDED TO RUN : 100B

OUTPUT UNITS
        LFN   USE
    -------   --
    DAYFILE   DATE AND TIME MESSAGE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        NONE
    OTHERS
        NONE

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 06/20/74 (V2.0)

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'DMPFIL'

PURPOSE
    DUMP FIRST N WORDS OF EACH LOGICAL RECORD IN M FILES

    FUNCTIONAL CATEGORY: N2

AUTHOR
    DAVID V SOMMER - NSRDC CODE 1892.2

DATE WRITTEN: 12/01/74

DATE(S) REVISED

REMARKS
    OUTPUT IS SUITABLE FOR TTY. EACH WORD IS LISTED ON ONE LINE
    IN BOTH OCTAL AND CHARACTER AND IS PRECEDED BY THE
    LOGICAL RECORD NUMBER (DECIMAL AND OCTAL). PARITY
    ERRORS, IF ANY, WILL BE FLAGGED.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        BUFFER IN
        LENGTH
        MINO
        RECOVR
        REMARK
        UNIT
    OTHERS
        EOJ   - ABNORMAL TERMINATION ROUTINE
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        IFMTV   - FAST VARIABLE I-FORMAT DECODE

INPUT/OUTPUT UNITS
    FORTRAN   LOCAL
    LOGICAL   FILE
    U N I T   NAME   USE
    -------   -------   --
       1   TAPE1   FILE TO BE DUMPED
                OUTPUT   LISTABLE OUTPUT

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        ATTACH,TAPE1, . . .   (FILE TO BE DUMPED)
        DMPFIL.

    FROM TTY
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        ATTACH,TAPE1, . . .   (FILE TO BE DUMPED)
        CONNECT,OUTPUT.
        DMPFIL.

```
EXECUTE CARD PARAMETERS
    DMPFIL,INFILE,OUTPUT,NWORDS,MFILES,REW.
        INFILE - INPUT FILE TO BE DUMPED
        OUTPUT - LISTABLE OUTPUT
        NWORDS - NUMBER OF WORDS OF EACH LOGICAL RECORD TO BE
                 DUMPED  (DEFAULT: 1 WORD)
        MFILES - NUMBER OF FILES OF A MULTI-FILE FILE TO BE
                 PROCESSED  (PROGRAM WILL STOP IF DOUBLE EOF
                 IS READ FIRST)  (DEFAULT: 1 FILE)
        REW    - REWIND OPTION
                 A     - REWIND INFILE AFTER USE
                 B     - REWIND INFILE BEFORE USE
                 R     - REWIND INFILE BEFORE AND AFTER USE
                 OTHER - NO REWIND (DEFAULT)
                 (ANY WORDS BEGINNING WITH 'A', 'B', 'R'
                 WILL PRODUCE THE SAME RESULTS)

DEFAULT EXECUTE CARD
    DMPFIL,TAPE1,OUTPUT,1,1,NOREW.

FL NEEDED TO LOAD: 25000B
```

PROGRAM 'DOC'   V2.4

PURPOSE
    PREPARE (SUB)PROGRAM AND CATALOGUED PROCEDURE DOCUMENTATION

FUNCTIONAL CATEGORY: Q6

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    IF ANY QUESTION IS ANSWERED WITH A SINGLE ENTRY OF ? , A
    LONG(ER), MORE DETAILED DESCRIPTION OF THE CURRENT ITEM
    IS TYPED.

    IF ANY QUESTION (EXCEPT FIRST FOUR (4)) IS ANSWERED WITH A
    SINGLE ENTRY OF a , THE CURRENT DOCUMENT IS TERMINATED.

    THE GENERATED DOCUMENT HAS CARRIAGE CONTROL IN COLUMN 1;
    SECTION HEADINGS BEGIN IN COLUMN 10; SUB-HEADINGS BEGIN IN
    COLUMN 13; USER-SUPPLIED INFORMATION USUALLY BEGINS IN
    COLUMNS 13 OR 16.

EXECUTION
    FROM BATCH
        NOT DESIGNED FOR BATCH USE

    FROM TTY
        CONNECT,OUTPUT
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        DOC.
            (CREATE DOCUMENT IN FILE 'DOCMNT')
        EDITOR
        EDIT,DOCMNT,S
            (MODIFY, IF NECESSARY. INDICATE START OF EACH PAGE
             BY PUTTING A '1' IN COLUMN 1 OF EACH LINE WHICH IS TO
             BE THE FIRST LINE OF A PAGE.)
        SAVE,NEWDOC,N
        LINER,NEWDOC.
            (WILL COUNT PAGES AND LINER PER PAGE. IF ANY PAGE HAS
             MORE THAN 59 LINES, GO BACK AND RESTRUCTURE THE
             DOCUMENT.)
        BYE
        DOCIT,NEWDOC,FILE.
        (DO SOMETHING WITH 'FILE' -- PERHAPS USE PROCEDURES
         'DOCADD' OR 'DOCREPL' TO PUT IT INTO A DOCUMENT FILE)

    EXECUTE CARD PARAMETERS
        DOC,DOCMNT,OPT.
            DOCMNT - CREATED DOCUMENT(S)
                      (MAY BE CATALOGED)
            OPT   - OPTION
                      LONG - TYPE LONG DESCRIPTION AT START OF
                              EXECUTION (DEFAULT)
                      Q   - DO NOT TYPE LONG DESCRIPTION
                      NEW   - TYPE DESCRIPTION OF NEW FEATURES
                      OTHER - QUICK ENTRY OF ANSWERS TO FIRST 4
                              QUESTIONS

DEFAULT EXECUTE CARD
   DOC,DOCMNT,LONG.

DEFAULT PL: 5000 LINES

FL NEEDED TO LOAD: 46000B
FL NEEDED TO RUN : 36000B

DATA ENTRIES
   THE DATA REQUESTED IS SUMMARIZED BELOW AND ON PAGE 3.
   EACH ITEM IS DISCUSSED IN GREATER DETAIL STARTING ON PAGE 4.

   ITEMS IN THE DOCUMENT ARE ENTERED IN RESPONSE TO QUESTIONS.
   THE RESPONSES ARE ONE LINE OR A VARIABLE NUMBER OF LINES.

   VARIABLE LENGTH SECTIONS HAVE (:) IN THE PROMPTING MESSAGE.
   EACH CONSISTS OF 0 OR MORE LINES AND IS TERMINATED BY A
   SEPARATE ENTRY OF : OR =. TO ERASE THE PREVIOUS LINE,
   USE A SEPARATE ENTRY OF MINUS (-).

   ALL (Y/N) RESPONSES: Y (OR ANY WORD STARTING WITH Y)=YES;
   ANYTHING ELSE=NO. IN THE DISCUSSIONS BELOW, 'ENTER Y' MEANS
   ENTER ANY WORD BEGINNING WITH Y; 'ENTER N' MEANS ENTER ANY
   WORD NOT BEGINNING WITH Y.)

   A SEPARATE ENTRY OF @ WILL IMMEDIATELY TERMINATE THE
   CURRENT DOCUMENT.

   A SEPARATE ENTRY OF ? WILL PROVIDE A LONG(ER) FORM OF THE
   CURRENT PROMPTING MESSAGE.

   A SEPARATE ENTRY OF -L WILL SWITCH TO LONG PROMPTING UNTIL
   END OF PROGRAM OR -S.

   A SEPARATE ENTRY OF -S WILL SWITCH TO SHORT PROMPTING
   UNTIL END OF PROGRAM OR -L.

   A SEPARATE ENTRY OF -ON WILL TURN REPRINT ON (PRINT WHAT
   YOU JUST ENTERED) UNTIL END OF PROGRAM OR -OFF.

   A SEPARATE ENTRY OF -OFF WILL TURN REPRINT OFF UNTIL END
   OF PROGRAM OR -ON.

   MOST MESSAGES WILL HAVE (IN PARENTHESES) THE NUMBER OF
   CHARACTERS ACCEPTED PER LINE.

   THE FOLLOWING ARE ASKED AT MOST ONCE PER EXECUTION:
      *DECK
      UNDERLINE
      REPRINT   - MAY BE CHANGED DYNAMICALLY
      PROMPT   - MAY BE CHANGED DYNAMICALLY
   THESE 4 MAY BE ENTERED AS A SINGLE PARAMETER ON THE EXECUTE
   CARD (DEFAULT- N2NS).

   THE FOLLOWING IS ASKED ONCE PER DOCUMENT:
      MAIN/SUBROUTINE/FUNCTION/PROCEDURE/END

   THE REST DEPEND UPON THE RESPONSE TO M/MC/S/F/P/E AND ARE
   SUMMARIZED IN THE TABLE ON PAGE 3:

	MAIN PROGRAM				SUBROUTINE/FUNCTION			
	FORTRAN	COBOL	OTHER	COVER	FORTRAN	COBOL	OTHER	PROCED
NAME	X	X	X	X	X	X	X	X
PURPOSE	X	X	X	X	X	X	X	X
FUNC CATEGORIES	X	X	X	X	X	X	X	X
LANGUAGE	X	X	X		X	X	X	
PROCED LOCATION								X
REMARKS	X	X	X		X	X	X	
USAGE					X	X	X	
BEGIN STATEMENT								X
# ARGS					X	X	X	X
DESCRIPTION					X	X	X	X
DEFAULT BEGIN								X
MAX FL								X
REMARKS								X
CM REQUIRED					X	X	X	
BATCH CTL CDS	X	X	X					
TTY CTL CRDS	X	X	X					
EXECUTE CARD	X	X	X	X				
DEFAULT EXEC CD	X	X	X	X				
DEFAULT PL	X							
LOAD FL	X	X	X					
RUN FL	X	X	X					
REDUCTION	X	X	X					
# DATA CARDS	X	X	X		X	X	X	X
SUB-HEADING	X	X	X		X	X	X	X
DESCRIPTION	X	X	X		X	X	X	X
MORE SUB-HEAD	X	X	X		X	X	X	X
ERRORS	X	X	X					X
I/O UNITS	X	X	X		X	X	X	
DESCRIPTION	X	X	X		X	X	X	
# EXAMPLES	X	X	X		X	X	X	X
EXAMPLE(S)	X	X	X		X	X	X	X
METHOD	X	X	X		X	X	X	
SUBPROGRAMS								
PART OF LANG	X	X	X		X	X	X	
PART OF PROG	X		X		X		X	
OTHERS	X	X	X		X	X	X	
ARITH STMT FCNS	X				X			
# AUTHORS	X	X	X		X	X	X	X
AUTHOR(S)	X	X	X		X	X	X	X
DATE WRITTEN	X	X	X		X	X	X	X
DATES REVISED	X	X	X		X	X	X	X
SOURCE LOCATION	X	X	X		X	X	X	
OBJECT LOCATION	X	X	X		X	X	X	
ANY MORE?	X	X	X		X	X	X	X

THE FOLLOWING FOUR ITEMS ARE REQUESTED AT MOST ONCE PER EXECUTION:

*DECK   A RESPONSE OF 'Y' WILL CAUSE AN UPDATE *DECK CARD TO BE
            GENERATED BEFORE EACH DOCUMENT CREATED DURING THIS
            EXECUTION.

            ANY OTHER RESPONSE WILL NOT GENERATE *DECK CARDS.

            IF THE DOCUMENTS GENERATED ARE TO BE PROCESSED BY
            CATALOGUED PROCEDURES 'DOCADD' OR 'DOCREPL', RESPOND 'N'.

UNDERLINE   SOME SECTIONS WILL HAVE SUB-HEADINGS WHICH WILL BE
            UNDERLINED. THERE ARE TWO POSSIBLE UNDERLINE CHARACTERS.

            ENTER 1   FOR UNDERSCORE (_), WHICH WILL BE PRINTED ON THE
            SAME LINE AS THE SUB-HEADING (CARRIAGE CONTROL: +).
            (SEE PAGE 11 FOR A SAMPLE.)

            ENTER 2   FOR HYPHEN (-), WHICH WILL BE PRINTED ON THE
            LINE AFTER THE SUB-HEADING (CARRIAGE CONTROL: SPACE).
            (SEE PAGE 8 FOR A SAMPLE.)

REPRINT   A RESPONSE OF 'Y' WILL CAUSE EACH OF THE ENTRIES TO BE
            TYPED BACK. THERE IS LIMITED PROVISION FOR CORRECTION IN
            MULTIPLE LINE ENTRIES.

            ANY OTHER RESPONSE WILL CAUSE NO REPRINT.

            TO TURN REPRINT ON AT ANY TIME DURING DOCUMENT GENERATION,
            USE A SEPARATE ENTRY OF '-ON'; TO TURN REPRINT OFF, ENTER
            '-OFF'.

PROMPT   THERE ARE TWO VERSIONS OF EACH PROMPTING MESSAGE.
            ENTER L   TO RECEIVE THE LONG FORM.
            ENTER S   TO RECEIVE THE SHORT FORM.

            TO SWITCH TO LONG FORM AT ANY TIME DURING DOCUMENT
            GENERATION, USE A SEPARATE ENTRY OF '-L'; TO SWITCH TO
            SHORT FORM, ENTER '-S'.

THESE QUESTIONS MAY BE ANSWERED ON THE EXECUTE CARD TO SAVE TIME.

    THE FOLLOWING ITEM IS REQUESTED ONCE PER DOCUMENT:

MAIN/COVER/SUBROUTINE/FUNCTION/PROCEDURE/END
            THE RESPONSE TO THIS DETERMINES WHICH OF THE REMAINING
            QUESTIONS WILL BE ASKED.

            ENTER M   TO DOCUMENT A MAIN PROGRAM.
            ENTER MC   TO CREATE A MAIN PROGRAM COVER SHEET.
            ENTER S   TO DOCUMENT A SUBROUTINE.
            ENTER F   TO DOCUMENT A FUNCTION.
            ENTER SF   TO DOCUMENT A SUBPROGRAM WHICH MAY BE USED AS A
                        SUBROUTINE OR FUNCTION. TWO HEADINGS WILL BE
                        GENERATED.
            ENTER FS   FOR THE SAME AS SF BUT WITH THE FUNCTION
                        HEADING FIRST.
            ENTER P   TO DOCUMENT A CATALOGUED PROCEDURE.
            ENTER E   TO END THE PROGRAM.

THE REMAINING QUESTIONS DEPEND UPON THE RESPONSE TO THE LAST
QUESTION. THE FOLLOWING ABBREVIATIONS WILL BE USED:
        M   - MAIN PROGRAM, ANY LANGUAGE
        MC   - MAIN PROGRAM COVER SHEET
        M(F)   - MAIN PROGRAM, FORTRAN
        M(C)   - MAIN PROGRAM, COBOL
        M(O)   - MAIN PROGRAM, NOT FORTRAN OR COBOL
        SF   - SUBROUTINE OR FUNCTION, ANY LANGUAGE
        SF(F)   - SUBROUTINE OR FUNCTION, FORTRAN
        SF(C)   - SUBROUTINE OR FUNCTION, COBOL
        SF(O)   - SUBROUTINE OR FUNCTION, NOT FORTRAN OR COBOL
        P   - CATALOGUED PROCEDURE

NAME   1-7 CHARACTER PROGRAM OR SUBPROGRAM NAME -OR-
                1-10 CHARACTER PROCEDURE NAME. (M,MC,SF,P)
                NOTE: WHILE PROCEDURE NAMES MAY BE 10 CHARACTERS, UPDATE
                      IS LIMITED TO 9-CHARACTER DECK NAMES AND PROCEDURES
                      FOR MAINTAINING DOCUMENT FILES ARE LIMITED TO
                      7-CHARACTER DECK NAMES.

PURPOSE   ANY NUMBER OF 1- TO 60-CHARACTER LINES DESCRIBING THE
                PURPOSE OF THE ROUTINE. END WITH A SEPARATE ENTRY OF :
                OR =. (M,MC,SF,P)

FUNCTIONAL CATEGORIES
                SPECIFY 1-10 2-CHARACTER FUNCTIONAL CATEGORIES TO WHICH
                THIS ROUTINE BELONGS. A LIST OF CATEGORIES MAY BE
                OBTAINED BY EXECUTING THE FOLLOWING COMMAND:
                    BEGIN,UTILITY,,PROGDOC,OTHER,,FUNCAT.
                THE LIST IS 3 PAGES LONG.
                (3-CHARACTER CATEGORIES WILL BE SUPPORTED IN V2.5)
                (M,MC,SF,P)

LANGUAGE   1-50 CHARACTERS NAMING OR DESCRIBING THE LANGUAGE THE
                ROUTINE IS WRITTEN IN.   (M,SF)
                THE FOLLOWING ABBREVIATIONS ARE RECOGNIZED:
                    A   - ALGOL
                    B   - BASIC
                    C   - COBOL (ALSO COB)
                    C4   - COBOL 4
                    C5   - COBOL 5
                    COM   - CDC 6000 CP COMPASS
                    F   - FORTRAN
                    F4   - FORTRAN IV
                    FTN   - FORTRAN IV EXTENDED
                    F5   - FORTRAN 77
                    FTN5   - FORTRAN 77 EXTENDED
                    MNF   - MINNESOTA FORTRAN
                    P   - PL/I (ALSO PLI, PL1, PL/1)
                    RATFOR - RATIONAL FORTRAN (ALSO RF)
                    S   - SNOBOL

PROCEDURE LOCATION
                SPECIFY THE LOCATION OF THE CATALOGUED PROCEDURE BEING
                DOCUMENTED (PROGRAM AND SUBPROGRAM LOCATIONS ARE REQUESTED
                LATER). GIVE EITHER THE PERMANENT FILE NAME AND ID OR A
                SAMPLE ATTACH. USE ANY NUMBER OF 1- TO 60-CHARACTER
                LINES.

REMARKS   ENTER ANY REMARKS ABOUT THE (SUB)PROGRAM. USE ANY NUMBER
                 OF 1- TO 60-CHARACTER LINES. END WITH A SEPARATE ENTRY OF
                 ! OR =.   (M,SF)
                 (REMARKS FOR MAIN PROGRAM COVER SHEET ARE GENERATED
                 AUTOMATICALLY)
                 (REMARKS FOR PROCEDURES ARE REQUESTED LATER.)

USAGE   ENTER CALL STATEMENT(S) OR FUNCTION USAGE WITH ALL
                 ARGUMENTS SHOWN. GIVE ALL POSSIBLE WAYS THE SUBPROGRAM
                 CAN BE USED. USE ANY NUMBER OF 1- TO 60-CHARACTER LINES.
                 END WITH A SEPARATE ENTRY OF ! OR =. DO NOT DESCRIBE THE
                 ARGUMENTS HERE. THE NEXT PROMPTING WILL BE FOR ARGUMENT
                 DESCRIPTION. (SF)

BEGIN STATEMENT
                 ENTER THE BEGIN STATEMENT SHOWING ALL PARAMETERS. TRY TO
                 USE THE NAMES IN THE PROCEDURE HEADER, IF POSSIBLE. USE
                 ANY NUMBER OF 1- TO 60-CHARACTER LINES. END WITH A
                 SEPARATE ENTRY OF ! OR =. DO NOT DESCRIBE THE PARAMETERS
                 HERE. THE NEXT PROMPTING WILL BE FOR PARAMETER
                 DESCRIPTION. (P)

NUMBER OF ARGUMENTS/PARAMETERS
                 ENTER 0 IF THE ROUTINE HAS NO PARAMETERS.
                 ENTER 1 IF THE ROUTINE HAS 1 PARAMETERS.
                 ENTER 2 IF THE ROUTINE HAS 2 OR MORE PARAMETERS.
                 (SF,P)

DESCRIPTION OF ARGUMENTS/PARAMETERS
                 REQUESTED ONLY IF RESPONSE TO LAST QUESTION WAS 1 OR 2.
                 DESCRIBE THE ARGUMENT(S) OF THE CALL OR FUNCTION USAGE OR
                 BEGIN STATEMENT PARAMETERS. USE ANY NUMBER OF 1- TO 60-
                 CHARACTER LINES. END WITH A SEPARATE ENTRY OF ! OR =.
                 (SF,P)

DEFAULT BEGIN
                 ENTER THE BEGIN STATEMENT SHOWING ALL DEFAULT VALUES. USE
                 ANY NUMBER OF 1- TO 60-CHARACTER LINES. END WITH A
                 SEPARATE ENTRY OF ! OR =. (P)

MAX FL   FIELD LENGTH REQUIRED FOR THE LARGEST PROGRAM EXECUTED IN
                 THE PROCEDURE. (P)
                 (FL FOR PROGRAMS AND SUBPROGRAMS IS REQUESTED LATER.)

REMARKS   ENTER ANY REMARKS ABOUT THE PROCEDURE. USE ANY NUMBER OF
                 1- TO 60-CHARACTER LINES. END WITH A SEPARATE ENTRY OF !
                 OR =.   (P)
                 (REMARKS FOR (SUB)PROGRAMS ARE REQUESTED EARLIER.)

CM REQUIRED   ENTER THE CORE REQUIRED FOR THIS SUBPROGRAM (1-40
                 CHARACTERS). THIS MAY BE OBTAINED FROM THE COMPILATION
                 LISTING.   (SF)

BATCH CONTROL CARDS

LIST THE CONTROL CARDS AND SHOW THE POSITIONING OF ANY
DATA CARDS. DON'T SHOW JOB OR CHARGE CARDS UNLESS THE JOB
CARD HAS SOME SPECIAL REQUIRED PARAMETERS (MT, NT, PK, T,
BUT NOT CM). USE ANY NUMBER OF 1- TO 57-CHARACTER LINES.

IF THE PROGRAM IS NOT DESIGNED FOR BATCH USE, THIS MESSAGE
(SEE PAGE 2) CAN BE GENERATED AUTOMATICALLY WITH A SINGLE
ENTRY OF 0 (ZERO).

IN EITHER CASE, END WITH A SEPARATE ENTRY OF $ OR =.   (M)

TTY CONTROL CARDS

LIST THE CONTROL CARDS AND SHOW THE POSITIONING OF ANY TTY
DATA ENTRIES (SEE PAGE 2). USE ANY NUMBER OF 1- TO 57-
CHARACTER LINES.

IF THE PROGRAM IS NOT DESIGNED FOR TTY USE, THIS MESSAGE
CAN BE GENERATED AUTOMATICALLY WITH A SINGLE ENTRY OF 0
(ZERO).

IN EITHER CASE, END WITH A SEPARATE ENTRY OF $ OR =.   (M)

EXECUTE CARD GIVE THE EXECUTE CARD SHOWING ANY PARAMETERS. THEN LIST
AND DESCRIBE EACH PARAMETER (SUGGEST STARTING THE
DESCRIPTIONS WITH 3 SPACES (SEE PAGE 2)). USE ANY NUMBER
OF 1- TO 57-CHARACTER LINES. END WITH A SEPARATE ENTRY OF
$ OR =. (M,MC)

DEFAULT EXECUTE CARD

GIVE THE EXECUTE CARD SHOWING ALL DEFAULT VALUES. USE ANY
NUMBER OF 1- TO 57-CHARACTER LINES. END WITH A SEPARATE
ENTRY OF $ OR =. (M,MC)

DEFAULT PL   ENTER PRINT LIMIT (PL) AS SPECIFIED ON FTN CONTROL CARD.
IF NOT SPECIFIED, ENTER SPACE, 0, $ OR =. (M(F))

LOAD FL   ENTER THE FIELD LENGTH NEEDED TO LOAD THE PROGRAM (1-40
CHARACTERS).   (M)

RUN FL   ENTER THE FIELD LENGTH NEEDED TO RUN THE PROGRAM (1-40
CHARACTERS).   (M)

REDUCTION   ENTER SPACE, $ OR = IF THE PROGRAM DOES NOT SPECIFICALLY
ADJUST CORE BUT USES THE CORE
DETERMINED BY THE LOADER.
ENTER 0 IF THE PROGRAM SPECIFICALLY REDUCES TO THE MINIMUM
NEEDED TO RUN.
ENTER 1 IF THE PROGRAM SPECIFICALLY ADJUSTS CORE UP AND/OR
DOWN AS PROGRAM REQUIREMENTS CHANGE.
IF THE PROGRAM REQUESTS A SPECIFIC AMOUNT OF CORE, ENTER
THAT AMOUNT.   (M)

NUMBER OF DATA CARDS

ENTER 0 IF NO DATA CARDS.
ENTER 1 FOR THE HEADING 'DATA CARD'.
ENTER 2 FOR THE HEADING 'DATA CARDS'.
(M,SF,P)

DATA CARD SUB-HEADING
        ENTER 0 IF NO SUB-HEADING IS DESIRED.
        ENTER 1 FOR THE SUB-HEADING 'COL   CONTENTS'.
        ENTER 2 FOR THE SUB-HEADING 'CARD   COL   CONTENTS'.
        (M,SF,P)

DATA CARD DESCRIPTION
        DESCRIBE THE DATA CARDS. USE ANY NUMBER OF 1- TO 60-
        CHARACTER LINES (IF NO SUB-HEADING) OR 1- TO 57-CHARACTER
        LINES (IF SUB-HEADING). END WITH A SEPARATE ENTRY OF : OR
        =.   (M,SF,P)

DO YOU WANT ANOTHER SUB-HEADING?
        ASKED ONLY IF SUB-HEADINGS WERE SPECIFIED.
        ENTER Y FOR ANOTHER SUB-HEADING.
        ENTER N TO CONTINUE THE DOCUMENT.

ERROR MESSAGES
        LIST ERROR MESSAGES THE PROGRAM CAN PRODUCE WITH AN
        EXPLANATION OF EACH (SUGGEST STARTING EXPLANATION WITH 3
        SPACES (SEE PAGE 10)). USE ANY NUMBER OF 1- TO
        60-CHARACTER LINES. END WITH A SEPARATE ENTRY OF : OR =.
        IF NO ENTRIES ARE GIVEN, THE SECTION WILL NOT APPEAR IN
        THE GENERATED DOCUMENT. (M,P)

INPUT/OUTPUT UNITS
        ENTER SPACE, : OR = IF NO I/O UNITS.
        ENTER I   FOR THE HEADING 'INPUT UNITS'.
        ENTER O   FOR THE HEADING 'OUTPUT UNITS'.
        ENTER IO   FOR THE HEADING 'INPUT/OUTPUT UNITS'.
        ENTER I/O FOR 2 HEADINGS: 'INPUT UNITS' AND 'OUTPUT UNITS'
                                  (EACH WILL BE PROMPTED FOR
        (M,SF)   SEPARATELY.)

DESCRIPTION OF I/O UNITS
        REQUESTED ONLY IF THE RESPONSE TO THE LAST QUESTION WAS I,
        O, IO OR I/O. SUB-HEADINGS ARE TYPED TO AID IN FORMATTING
        DESCRIPTIONS.

        FOR FORTRAN, 3 COLUMNS ARE USED: FORTRAN LOGICAL UNIT
        NUMBER, LOCAL FILE NAME AND USE. FOR EXAMPLE, FOR THE
        PROGRAM STATEMENT:
            PROGRAM ANY (INPUT, TAPE7, OUTPUT, TAPE5=INPUT)
        UNIT #   LFN   USE
        -------   -------   ---
          5   INPUT   DATA CARD INPUT
                    OUTPUT   LISTABLE OUTPUT
          7   TAPE7   WORK FILE
        LIST FILES IN ALPHABETICAL ORDER BY LFN. BE SURE TO
        INCLUDE ALL RECORD MANAGER FILES WHICH ARE NOT ALSO IN THE
        PROGRAM STATEMENT.

        FOR NON-FORTRAN, ONLY THE LAST 2 COLUMNS ARE USED.
        (M,SF)

NUMBER OF EXAMPLES
        ENTER   0   IF NO EXAMPLES.
        ENTER   1   IF 1 EXAMPLE (HEADING WILL BE 'EXAMPLE').
        ENTER   2   IF 2 OR MORE EXAMPLES (HEADING WILL BE
               'EXAMPLES').
        (M,SF,P)

EXAMPLES   GIVE THE EXAMPLE(S). USE ANY NUMBER OF 1- TO 60-CHARACTER
        LINES. END WITH A SEPARATE ENTRY OF $ OR =.   (M,SF,P)

METHOD   IF DESIRED, DESCRIBE THE METHOD USED. IF APPROPRIATE,
        CITE REFERENCES. USE ANY NUMBER OF 1- TO 60-CHARACTER
        LINES. END WITH A SEPARATE ENTRY OF $ OR =. IF NO
        DESCRIPTION IS GIVEN, THE SECTION WILL NOT APPEAR IN THE
        GENERATED DOCUMENT. (M,SF)

SUBPROGRAMS REQUIRED (PART OF LANGUAGE)
        LIST ALL SUBROUTINES AND FUNCTIONS USED BY THIS ROUTINE
        WHICH ARE A PART OF THE LANGUAGE (SUCH AS SIN, COS, EOF,
        BUFFEROUT, CONNEC, ETC.). USE ANY NUMBER OF 1- TO 57-
        CHARACTER LINES. FIVE NAMES WILL FIT ON A LINE IN 10-
        CHARACTER FIELDS. THEY SHOULD BE LISTED ALPHABETICALLY OR
        GROUPED ACCORDING TO TYPE (EG. LOGICAL FUNCTIONS, TRIG
        FUNCTIONS, NON-STANDARD I/O ROUTINES, ETC.). END WITH A
        SEPARATE ENTRY OF $ OR =. (M,SF)

SUBPROGRAMS REQUIRED (PART OF PROGRAM)
        LIST AND DESCRIBE ALL SUBROUTINES AND FUNCTIONS WHICH WERE
        WRITTEN SPECIFICALLY FOR THIS PROGRAM OR SUBPROGRAM. USE
        ANY NUMBER OF 1- TO 57-CHARACTER LINES. END WITH A
        SEPARATE ENTRY OF $ OR =. (M(F),M(O),SF(F),SF(O))

SUBPROGRAMS REQUIRED (OTHERS)
        LIST ALL SUBPROGRAMS USED (SUCH AS THOSE IN USER LIBRARIES
        OR OTHER FILES) WHICH ARE NOT LISTED ABOVE. USE ANY
        NUMBER OF 1- TO 57-CHARACTER LINES. END WITH A SEPARATE
        ENTRY OF $ OR =.   (M,SF)

ARITHMETIC STATEMENT FUNCTIONS
        LIST AND DESCRIBE ALL ARITHMETIC STATEMENT FUNCTIONS USED.
        USE ANY NUMBER OF 1- TO 60-CHARACTER LINES. END WITH A
        SEPARATE ENTRY OF $ OR =. (M(F),SF(F))

NUMBER OF AUTHORS
        ENTER   1   IF 1 AUTHOR (HEADING WILL BE 'AUTHOR').
        ENTER   2   IF 2 OR MORE AUTHORS (HEADING WILL BE 'AUTHORS')
        (M,SF,P)

AUTHORS   LIST ALL AUTHORS WITH COMPANY AND/OR CODE. USE ANY NUMBER
        OF 1- TO 60-CHARACTER LINES. END WITH A SEPARATE ENTRY OF
        $ OR =. (M,SF,P)

DATE WRITTEN ENTER THE DATE WRITTEN (1-50 CHARACTERS). (M,SF,P)

DATES REVISED
ENTER THE DATES REVISED, WITH PERHAPS A DESCRIPTION OF THE
REVISION, PROGRAM REVISION NUMBER, ETC. USE ANY NUMBER OF
1- TO 60-CHARACTER LINES. END WITH A SEPARATE ENTRY OF ;
OR =. (M,SF,P)

SOURCE DECK LOCATION
LIST ALL PLACES THE SOURCE PROGRAM IS LOCATED. USE ANY
NUMBER OF 1- TO 57-CHARACTER LINES. END WITH A SEPARATE
ENTRY OF ; OR =. (M,SF)

OBJECT DECK LOCATION
LIST ALL PLACES THE OBJECT PROGRAM IS LOCATED. USE ANY
NUMBER OF 1- TO 57-CHARACTER LINES. END WITH A SEPARATE
ENTRY OF ; OR =. (M,SF)

DO YOU WANT TO DOCUMENT ANOTHER ROUTINE?
ENTER Y TO DOCUMENT ANOTHER ROUTINE.
ENTER N TO END THE PROGRAM.
IT IS SUGGESTED THAT ONLY ONE DOCUMENT BE GENERATED AT A
TIME.
(M,SF,P)

ERROR MESSAGES
    DOCUMENT TERMINATED - DOCNAME
        TTY MESSAGE WHEN USER ENTERS ∂ TO TERMINATE THE CURRENT
        DOCUMENT

    IGNORED - NO PREVIOUS LINE TO DELETE
        USER ENTERED '-' IN MULTIPLE LINE SECTION THAT IS
        CURRENTLY EMPTY (REPRINT MODE ONLY)

    LAST LINE DELETED
        USER ENTERED '-' IN MULTIPLE LINE SECTION (REPRINT MODE
        ONLY)

    SORRY. I MUST HAVE A PROCEDURE NAME BEFORE I CAN CONTINUE.
        SELF-EXPLANATORY

    SORRY. I MUST HAVE A ROUTINE NAME BEFORE I CAN CONTINUE.
        SELF-EXPLANATORY

    *****   THIS DOCUMENT TERMINATED EARLY   *****
        PUT INTO DOCUMENT WHEN USER ENTERS ∂ TO TERMINATE THE
        CURRENT DOCUMENT
    ... TRUNCATED
        END OF A TOO-LONG ENTRY DROPPED. IF IN A MULTIPLE LINE
        SECTION, USER MAY ENTER '-' AND RETYPE THE LINE OR WAIT
        AND CORRECT IT LATER IN EDITOR.

INPUT/OUTPUT UNITS

UNIT_#	_LEN_	USE
4	DOCMNT	CREATED DOCUMENTS (ON PF SPACE)
	OUTPUT	FTN ERROR MESSAGES
5	TTY	TERMINAL INPUT/OUTPUT

METHOD
    TTY IS PROMPTED FOR EACH SECTION OF THE DOCUMENT.

    THE SECTIONS REQUESTED ARE DETERMINED BY THE SOURCE
    LANGUAGE AND TYPE OF ROUTINE.

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SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND         CONNEC      DATE        EOF         IABS
        MOVLEV      RECOVR      REMARK      SHIFT
    PART OF PROGRAM
        AACOVER  - DRIVER FOR MAIN PROGRAM COVER SHEET
        AAPROC   - DRIVER FOR PROCEDURES
        AAPROG   - DRIVER FOR (SUB)PROGRAMS
        ANYMOR   - ASK IF ANY MORE DOCUMENTS TO BE CREATED
        ARITH    - ASK FOR ARITHMETIC STATEMENT FUNCTIONS
        AUTHOR   - ASK FOR AUTHORS
        CATGORY  - ASK FOR FUNCTIONAL CATEGORY(IES)
        CATPRO   - GET PROCEDURE NAME
        DATA     - ASK FOR DATA CARD DESCRIPTION
        DECK1    - ASK IF *DECK CARDS DESIRED
        DEFPL    - ASK FOR DEFAULT PL
        DOCIT    - EXTEND MAIN PROGRAM COVER SHEET TO 60 LINES
        ECHO1    - ASK IF ECHO DESIRED
        ENDIT    - CLOSE PROGRAM AND PRINT SUMMARY
        EOJ      - ABNORMAL TERMINATION ROUTINE
        ERRORS   - ASK FOR ERROR MESSAGES
        EXAM     - ASK FOR PROCEDURE EXAMPLES
        EXEC     - ASK FOR EXECUTION INSTRUCTIONS
        EXEC1    - ASK FOR CM REQUIRED FOR SUBPROGRAM
                     (ENTRY IN EXEC)
        EXEC2    - ASK FOR PROCEDURE MAX FL
                     (ENTRY IN EXEC)
        FASTOPT  - PROCESS EXECUTE CARD OPTION
        GET13    - GET VARIABLE LENGTH INFO AND PRINT IN COL 13
        GET16    - GET VARIABLE LENGTH INFO AND PRINT IN COL 16
                     (ENTRY IN GET13)
        IIOO     - ASK FOR INPUT/OUTPUT DESCRIPTION
        LANG1    - ASK FOR SOURCE LANGUAGE
        LOC      - ASK FOR PROCEDURE LOCATION
        METH     - ASK FOR METHOD DESCRIPTION
        OBJ      - ASK FOR LOCATION OF SOURCE/OBJECT DECKS
        ONOFFSL  - DYNAMIC REPRINT ON/OFF, SHORT/LONG PROMPT
        PARAM    - ASK FOR SUBPROGRAM PARAMETERS
        PRMPT    - ASK IF LONG/SHORT PROMPTING DESIRED
        PRODEF   - ASK FOR DEFAULT BEGIN STATEMENT
        PROG     - ASK FOR ROUTINE NAME
        PURP     - ASK FOR PURPOSE
        REM      - ASK FOR REMARKS
        SUBS     - ASK FOR SUBPROGRAMS REQUIRED
        TRUNC    - PRINT TRUNCATED MESSAGE
        UNDER1   - ASK WHICH UNDERLINE CHARACTER DESIRED
        USAGE    - ASK FOR SUBPROGRAM USAGE INFO
        WRIT     - ASK FOR DATES WRITTEN AND REVISED
    OTHERS
        ADJL     - SQUEEZE LEFT (SPACE BETWEEN WORDS)
        ELTIME   - ELAPSED TIME COMPUTATIONS
        FINDWRD  - SEARCH ARRAY FOR WORD
        FSETFIT  - SET FTN FIT
        GETLFNS  - GET ACTUAL LOCAL FILE NAMES
        PAKLFT   - SQUEEZE LEFT AND REMOVE BLANKS AND 00B
        REQUEST  - REQUEST,DOCMNT,*PF.
        ZBLANK   - CHANGE BLANKS TO 00B
```

ARITHMETIC STATEMENT FUNCTIONS
    I11FMT - FAST I-FORMAT DECODE
    L61FMT - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
    L81FMT - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 11/03/73

DATE(S) REVISED
    11/19/73 - V1.1
    03/24/75 - V1.2
    12/01/75 - V1.3
    03/17/76 - V1.4
    03/31/76 - V1.5
    05/07/76 - V1.6 - CHANGE CONTROL CHARACTER BACK SLASH TO @
                      (BECAUSE COM UNIT WON'T PRINT BACK SLASH)
    08/30/76 - V2.0 - CHANGE ORDER OF DOCUMENT.
                      SHORTEN PROCESSING OF 'DATA CARD' SECTION.
    10/20/76 - V2.1 - FIX SOME PROMPTING MESSAGES. MOVE PROMPT
                      FOR LANGUAGE TO ITS POSITION IN THE
                      DOCUMENT (AFTER FUNCTIONAL CATEGORIES).
                      TO AVOID CONFUSION WITH ECHO/NON-ECHO MODE
                      OF A TELETYPE, THE WORD 'ECHO' IS CHANGED
                      TO 'REPRINT' IN THIS PROGRAM. ALLOW
                      REPRINT TO BE TURNED ON/OFF DYNAMICALLY.
                      ALLOW LONG/SHORT PROMPTING TO BE CHANGED
                      DYNAMICALLY. ADD SEVERAL LANGUAGE
                      ABBREVIATIONS.
    02/14/77 - V2.2 - ADD DEFAULT PL FOR FORTRAN MAIN PROGRAMS.
                      ADD SECTION OF ERROR MESSAGES FOR MAIN
                      PROGRAMS AND PROCEDURES.
    04/20/77 - V2.3 - ADD MORE DEFAULTS FOR LANGUAGE.
                      REMOVE ONE OF TTY PROMPTER FILES
                      (PROGRAM LEAVES FILE 'TTY' CONNECTED).
                      CORRECT @ PROCESSING IN 2 PLACES.
    08/03/77 - V2.4 - EXPAND EXECUTE CARD OPTION PARAMETER.
                      ADD MAIN PROGRAM COVER SHEET.

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'DOCIT'

PURPOSE
    ADD PAGING TO A DOCUMENT

FUNCTIONAL CATEGORY: Q6

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    NORMALLY, PROGRAM 'DOC' (OR 'MTDOC') IS USED TO CREATE A
    DOCUMENT. AN EDITOR IS THEN USED TO MODIFY IT AND INDICATE
    THE START OF EACH PAGE. PROGRAM 'LINER' MAY BE USED TO
    CHECK PAGE LENGTHS. FINALLY, 'DOCIT' WILL INCREASE EACH
    PAGE TO 60 OP 80 LINES (FOR 6 OR 8 LINES PER INCH,
    RESPECTIVELY) AND ADD THE DATE, DOCUMENT NAME AND PAGE
    NUMBER AT THE BOTTOM OF EACH PAGE.

    DOCUMENT LINES HAVE THE FOLLOWING FORMAT:
        COL   CONTENTS
        -----   ---------
         1   CARRIAGE CONTROL ('1', ' ', '0', '-', '+', 'S',
                 'T', 'V', 'VC')
                 THE FOLLOWING SPECIAL CARRIAGE CONTROL CHARACTERS
                 ARE RECOGNIZED:
                    S - LINE COPIED AND LINES PER PAGE SET TO 60
                    T - LINE COPIED AND LINES PER PAGE SET TO 80
                    V - LINE COPIED
                    VC - THIS LINE AND NEXT LINE COPIED
                 THESE CHARACTERS DO NOT ALTER THE LINE COUNT.
        2-72   LINE TO BE PRINTED
                 (CHARACTERS AFTER COLUMN 72 ARE NOT COPIED)

    THE LAST LINE OF EACH PAGE (PRODUCED BY DOCIT) WILL BE
    CREATED BY DOCIT IN THE FOLLOWING FORMAT:
        COL   CONTENTS
        -----   ---------
         1   CARRIAGE CONTROL (' ', '0')
        2-9   DATE (MM/DD/YY)
        27-36   TYPE OF DOCUMENT. ONE OF: PROGRAM, SUBROUTINE,
                 FUNCTION, PROCEDURE, MAG TAPE.
        55-61   DOCUMENT NAME
         63   '-'
        65-66   PAGE NUMBER
        68-69   'OF'
        71-72   TOTAL NUMBER OF PAGES

    THE DOCUMENT NAME IS TAKEN FROM LINES HAVING '1' IN COLUMN 1
    AND THE FOLLOWING CHARACTER STRINGS STARTING IN COLUMN 10):
        PROGRAM '<NAME>'
        SUBROUTINE '<NAME>'
        FUNCTION   '<NAME>'
        PROCEDURE '<NAME>'
        TAPE '<TAPENO>'
    WHERE <NAME> IS 1-7 CHARACTERS; <TAPENO> IS 1-6 CHARACTERS.

```
EXECUTION
    FROM BATCH
        NOT DESIGNED FOR BATCH USE

    FROM TTY
        CONNECT,OUTPUT
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        DOC.
            (CREATE DOCUMENT ON FILE 'DOCMNT')
        EDITOR
        EDIT,DOCMNT,S
            (MODIFY, IF NECESSARY.  INDICATE START OF EACH PAGE BY
             PUTTING A '1' IN COLUMN 1 OF EACH LINE WHICH IS TO BE
             THE FIRST LINE OF A PAGE.)
        SAVE,NEWDOC,N
            (INSTEAD OF THE EDITOR/EDIT/SAVE SEQUENCE, ANOTHER
             EDITOR MAY BE USED, SUCH AS:
                ATTACH,NETED.
                NETED,DOCMNT
                    (MODIFY, ETC.)
                SAVE NEWDOC                    )
        LINER,NEWDOC.
            (WILL COUNT PAGES AND NUMBER OF LINES PER PAGE.  IF
             ANY PAGE HAS MORE THAN 59 OR 79 LINES, GO BACK AND
             RESTRUCTURE.)
        BYE
        DOCIT,NEWDOC,FILE.
        (DO SOMETHING WITH 'FILE' -- PERHAPS USE PROCEDURES
         'DOCADD' OR 'DOCREPL' TO PUT IT INTO A DOCUMENT FILE)

    EXECUTE CARD PARAMETERS
        DOCIT,INFILE,OUTFILE,MAXPAGE,DATE,NAME,OUTPUT.
            INFILE  - INPUT FILE  (REWOUND BEFORE AND AFTER)
            OUTFILE - OUTPUT FILE (REWOUND BEFORE AND AFTER)
            MAXPAGE - MAXIMUM NUMBER OF PAGES IN DOCUMENT (1-9)
                      (IF OMITTED, PROGRAM WILL COUNT PAGES)
            DATE    - DATE TO BE PUT ON BOTTOM LINE OF EACH
                      DOCUMENT (MMDDYY)
                      (IF OMITTED, CURRENT DATE WILL BE USED)
            NAME    - NAME OF DOCUMENT
                      (WILL BE USED ONLY IF NAME CANNOT BE FOUND
                      ON FIRST LINE OF DOCUMENT)
            OUTPUT  - LISTABLE OUTPUT (ERROR MESSAGES)

    DEFAULT EXECUTE CARD
        DOCIT,TAPE1,TAPE2,,,,OUTPUT.

    FL NEEDED TO LOAD: 31000B
    FL NEEDED TO RUN : 21000B
```

ERROR MESSAGES
    ABEND
        PROGRAM TERMINATED ABNORMALLY

    ***** CARD NO. <NNN> <CARD-IMAGE>
    ***** ERROR - ABOVE CARD HAS INVALID CARRIAGE CONTROL
    CHARACTER (<CC>)
        MESSAGE APPEARS ON OUTPUT FILE. CORRECT ERROR AND
        RE-EXECUTE PROGRAM.

    <NNNNN> ERRORS - JOB TERMINATED
        NUMBER OF INVALID CARRIAGE CONTROL CHARACTERS
        ENCOUNTERED.

    INPUT FILE EMPTY
        INPUT FILE HAS NO INFORMATION

    INVALID CC - TERMINATED
        AN UNRECOGNIZED CARRIAGE CONTROL CHARACTER WAS
        ENCOUNTERED AND PROGRAM TERMINATED. ERROR IS LISTED
        ON OUTPUT FILE. CORRECT AND RE-EXECUTE PROGRAM.

    NO PAGES ENCOUNTERED
        NO CARRIAGE CONTROL '1' FOUND WHILE COUNTING
        PAGES. MAY OR MAY NOT BE A DOCUMENT.

INPUT/OUTPUT UNITS

UNIT #	LFN	USE
	DAYFILE	ERROR MESSAGES AND MESSAGES GIVING DOCUMENT NAME, DATE AND NUMBER OF PAGES
	OUTPUT	LISTABLE OUTPUT (ERROR MESSAGES)
	TAPE1	INPUT FILE
	TAPE2	OUTPUT FILE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   CLOSEM   DATE   FILESQ   GET
        IFETCH   MAX0   MOD   OPENM   OR
        PUT   RECOVR   REMARK   SHIFT
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        IFMTEN - FAST I-FORMAT ENCODE
        IFMTV   - FAST VARIABLE I-FORMAT DECODE
        LASTC   - FIND LAST NON-BLANK CHARACTER
        MOVSTR - MOVE CHARACTER STRING
        PUTCHA - INSERT CHARACTER INTO STRING
        REPLAC - REPLACE ONE CHARACTER WITH ANOTHER

ARITHMETIC STATEMENT FUNCTIONS
    FAST A-FORMAT DECODE (LEFT-ADJ, BLANK-FILLED)
        A66FMT   A81FMT   A88FMT   A89FMT   A810FMT
    FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
        L11FMT   L21FMT   L23FMT   L25FMT   L31FMT
        L41FMT   L51FMT   L61FMT   L81FMT   L91FMT
    FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
        R11FMT

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 05/04/76

DATE(S) REVISED
    05/05/76
    06/21/76 - ADD SCAN FOR MTDOC OUTPUT AND OPTIONAL NAME ON
               EXECUTE CARD
    08/30/76 - MOVE FUNCTION NAME EXTRACTION 2 COLUMNS TO THE
               RIGHT. ACCEPT AND IGNORE (COPY) *DECK CARD.
    10/18/76 - 1) CHANGE OUTPUT TO TAPE2 ('OUTPUT' IS FOR ERROR
                  MESSAGES).
               2) REWIND INFILE AND OUTFILE BEFORE AND AFTER.
               3) LET PROGRAM COUNT PAGES.
               4) DOCUMENT NAME AND PAGE NUMBER MOVED LEFT 1
                  COLUMN ON BOTTOM LINES.
    06/02/77 - 1) ALLOW FOR 6/8 LPI.
               2) CONVERT OUTPUT FILE TO 6RM.
               3) ADD DOCUMENT TYPE TO BOTTOM LINE OF DOCUMENT.
    07/29/77 - 1) REMOVE DOCUMENT TYPE FROM BOTTOM LINE OF
                  DOCUMENT.

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

```
PROGRAM 'DOCUMNT'

PURPOSE
    MAINTAIN A FILE OF DOCUMENTS

    FUNCTIONAL CATEGORY:    Q6  K3

REMARKS
    EACH DOCUMENT IN A DOCUMENT FILE IS PRECEDED BY A
    CARD WITH '*DECK ' IN COLUMNS 1-6 AND A 1-7-CHARACTER
    DECK NAME IN COLUMNS 7-13.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM      FILESQ      IFETCH      MOVLEV      OPENM
        PUT         RECOVR      REMARK      SHIFT
    PART OF PROGRAM
        COPY    - COPY DOCUMENT FILE
        EOJ     - ABNORMAL TERMINATION ROUTINE
        NEW     - READ AND ADD NEW DOCUMENT
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        REPLAC  - REPLACE ONE CHARACTER WITH ANOTHER
        REQUEST - REQUEST,NEW,*PF.
        VFILL   - FILL ARRAY WITH WORD

ARITHMETIC STATEMENT FUNCTIONS
    FAST A-FORMAT DECODE (LEFT-ADJ, BLANK-FILLED)
        A35FMT
    FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
        L21FMT      L41FMT      L51FMT      L61FMT      L77FMT
        L81FMT
    FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
        R41FMT

LANGUAGE: FORTRAN IV

INPUT/OUTPUT UNITS
    UNIT #      LFN                             USE
    -------     -------     ------------------------------------------
                IN          INPUT FILE FOR NEW DOCUMENT
                NEW         NEW DOCUMENT FILE
                OLD         OLD DOCUMENT FILE
                OUTPUT      FTN ERROR MESSAGES

EXECUTION
    FROM BATCH AND TTY
        ATTACH,UTILITY.
        ATTACH,OLD,.....        (OLD DOCUMENT FILE)
        LIBRARY,UTILITY.
        DOCUMNT,.....
        CATALOG,NEW,.....       (NEW DOCUMENT FILE)
```

```
EXECUTE CARD PARAMETERS
    DOCUMNT,OLD,NEW,FCN,PROG,AFTER,IN,GID1,GID2,OUTPUT.
        OLD     - OLD DOCUMENT FILE
        NEW     - NEW DOCUMENT FILE
                  (ALSO OUTPUT OF G FUNCTION)
        FCN     - FUNCTION
                  A - ADD A DOCUMENT
                  D - DELETE A DOCUMENT
                  G - GET A DOCUMENT
                      (IF NEW OMITTED, NEW=PROG)
                  R - REPLACE A DOCUMENT
                      (IF PROG NOT FOUND, FCN CHANGED TO A)
        PROG    - DOCUMENT NAME
        AFTER   - FOR ADD FUNCTION, LOCATION OF NEW
                  DOCUMENT IN DOCUMENT FILE
                  OMITTED - PROG IS ADDED ALPHABETICALLY
                  0       - PROG IS ADDED AT START OF FILE
                  END     - PROG IS ADDED AT END OF FILE
                  OTHER   - PROG IS ADDED AFTER THIS DOCUMENT
        IN      - INPUT FILE FOR NEW DOCUMENT
                  REWOUND BEFORE AND AFTER USE
                  MUST NOT CONTAIN *DECK CARD
        GID1    - RESERVED FOR FUTURE USE
        GID2    - RESERVED FOR FUTURE USE
        OUTPUT  - FTN ERROR MESSAGES
                  (PROGRAM MESSAGES ARE PUT INTO THE DAYFILE)

    DEFAULT EXECUTE CARD
        DOCUMNT,OLD,NEW,,PROG,AFTER,IN,GID1,GID2,OUTPUT.

    FL NEEDED TO LOAD: 31000B
    FL NEEDED TO RUN : 22000B

EXAMPLES
    ASSUME THE OLD DOCUMENT FILE (ON LFN OLD) HAS THE FOLLOWING
    DOCUMENTS: A, B, D, F, G, H.

    TO ADD DOCUMENT C (ON LFN CC) IN ALPHABETICAL ORDER:
        DOCUMNT,,,A,C,,CC.
    THE NEW DOCUMENT FILE WILL HAVE: A, B, C, D, F, G, H.

    TO ADD DOCUMENT C (ON LFN CC) AT START OF THE FILE:
        DOCUMNT,,,A,C,0,CC.
    THE NEW DOCUMENT FILE WILL HAVE: C, A, B, D, F, G, H.

    TO ADD DOCUMENT C (ON LFN CC) AT THE END OF THE FILE:
        DOCUMNT,,,A,C,END,CC.
    THE NEW DOCUMENT FILE WILL HAVE: A, B, D, F, G, H, C.

    TO ADD DOCUMENT C (ON LFN CC) AFTER DOCUMENT F:
        DOCUMNT,,,A,C,F,CC.
    THE NEW DOCUMENT FILE WILL HAVE: A, B, D, F, C, G, H.

    TO DELETE DOCUMENT G:
        DOCUMNT,,,D,G.
    THE NEW DOCUMENT FILE WILL HAVE: A, B, D, F, H.
```

TO REPLACE DOCUMENT F (NEW DOCUMENT ON LFN FF):
    DOCUMNT,,,R,F,,FF.
THE NEW DOCUMENT FILE WILL HAVE: A, B, D, F, G, H.

TO REPLACE DOCUMENT E (NEW DOCUMENT ON LFN EE):
    DOCUMNT,,,R,E,,EE.
THE NEW DOCUMENT FILE WILL HAVE: A, B, D, E, F, G, H.
NOTE THAT SINCE E DID NOT EXIST, REPLACE FUNCTION WAS
CHANGED TO ADD (DOCUMNT,,A,E,,EE.). BECAUSE THE AFTER
PARAMETER WAS OMITTED, E WAS ADDED ALPHABETICALLY.

TO GET (EXTRACT) DOCUMENT D:
    DOCUMNT,,,G,D.   (DOCUMENT WILL BE ON LFN G)
    DOCUMNT,,DD,G,D.   (DOCUMENT WILL BE ON LFN DD)

AUTHOR
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DATE WRITTEN: 01/20/76

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'EXECARD'

PURPOSE
    EXTRACT EXECUTE CARD PARAMETER/SUBPROGRAM USAGE/PROCEDURE
    USAGE INFORMATION FROM DOCUMENTATION FILES (WHICH WERE
    PREPARED IN THE FORMAT GENERATED BY PROGRAM 'DOC')

FUNCTIONAL CATEGORY: SU Q6

REMARKS
    DOCUMENTATION FILE IS COMPATIBLE WITH AN UPDATE 'SOURCE'
    FILE OF *DECK'S ONLY.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   DATE   EOF   MOVLEV   OR
        RECOVR   REMARK   SHIFT   TIME
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        FSETFIT - SET FTN FIT VALUES
        GETLFNS - GET ACTUAL FILE NAMES
        PAKLFT - SQUEEZE BLANKS AND ZEROS OUT OF PFN
        ZPFUNC - ATTACH DOCUMENTATION FILE

ARITHMETIC STATEMENT FUNCTIONS
    FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
        L11FMT   L21FMT   L51FMT   L61FMT   L77FMT
        L710FMT   L81FMT
    FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
        R92FMT

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   ---
        1   ZZDOC   FILE CONTAINING DOCUMENTATION
                            (ATTACHED AND RETURNED WITHIN PROGRAM)
                            (IF THE USER REPLACES THE FILE NAME AT
                            EXECUTION TIME, THE FILE IS ASSUMED TO
                            BE ALREADY ATTACHED AND WILL NOT BE
                            RETURNED)
                OUTPUT   LISTABLE OUTPUT

EXECUTION
    FROM BATCH
        BEGIN,UTILITY,,EXECARD,LIBRARY,ID.

    FROM TTY
        BEGIN,UTILITY,,EXECARD,LIBRARY,,ID,ANY,....
        ROUTE,ANY,DC=PR,....

```
EXECUTE CARD PARAMETERS
    EXECARD,LIBRARY,ID,OUTPUT,LEFT,FULL,DOCFILE.
        LIBRARY - NAME OF LIBRARY TO BE EXTRACTED
                  MAY BE ONE OF:
                      NSRDC
                      UTILITY (DEFAULT)
                      ANY OTHER LIBRARY NAME (1-7 CHAR)
                  PROGRAM WILL ATTACH AND RETURN THE
                  DOCUMENTATION FILE.  THE PFN USED WILL BE
                  THE LIBRARY NAME SPECIFIED, FOLLOWED BY
                  'DOCUMENTATION'  (DEFAULT IS
                  'UTILITYDOCUMENTATION')
        ID      - ID UNDER WHICH DOCUMENTATION IS CATALOGED
                  (DEFAULT IS THE SYSTEM PUBLIC ACCESS ID)
        OUTPUT  - LISTABLE OUTPUT
        LEFT    - PRINT CENTERING
                  OMITTED OR 'LEFT' - LEFT-JUSTIFIED ON PAGE
                  ANYTHING ELSE     - CENTERED ON LARGE PAGE
                  (DEFAULT IS LEFT-JUSTIFIED)
        FULL    - OMITTED OR 'FULL' - PRINT ONE OF:
                      A) PROGRAM EXECUTE CARD, DESCRIPTION OF
                         PARAMETERS, DEFAULT EXECUTE CARD;
                      B) SUBPROGRAM USAGE AND DESCRIPTION OF
                         PARAMETERS;
                      C) PROCEDURE USAGE, DESCRIPTION OF
                         PARAMETERS AND DEFAULT BEGIN STATEMENT
                  ANYTHING ELSE     - PRINT ONLY EXECUTE CARD
                  OR SUBPROGRAM USAGE OR PROCEDURE USAGE
        DOCFILE - IF USER HAS PREVIOUSLY ATTACHED A
                  DOCUMENTATION FILE, PLACE LFN HERE AND OMIT
                  THE FIRST 2 PARAMETERS ('LIBRARY' AND 'ID').
                  WHEN THIS PARAMETER IS USED AND IS NOT
                  'ZZDOC', THE FILE IS NOT RETURNED AT END OF
                  EXECUTION.

    DEFAULT EXECUTE CARD
        EXECARD,UTILITY,*---*,OUTPUT,LEFT,FULL,ZZDOC.

    FL NEEDED TO LOAD: 30000B
    FL NEEDED TO RUN : 20000B

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 05/03/76

DATE(S) REVISED
    05/05/76
    05/18/76

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:  UTILITY
```

PROGRAM 'FORMATR'

PURPOSE
    THIS IS A TEXT FORMATTER. IT IS DESIGNED TO BE OF
    ASSISTANCE TO THE PERSON WHO NEEDS TO MANIPULATE TEXT FILES
    WHICH ARE NOT INHERENTLY LINE ORIENTED. IT WILL ACCEPT
    FREE-FORM INPUT AND GENERATE FORMATTED OUTPUT UTILIZING
    ARBITRARILY SIZED RECORDS. THE INPUT CONSISTS OF TEXT AND
    OPTIONAL DIRECTIVES WHICH CONTROL SUCH FUNCTIONS AS
    PARAGRAPH INDENTING AND LINE SPACING.

FUNCTIONAL CATEGORY: M4   R4

LANGUAGE: FORTRAN IV

REMARKS
    1 - THIS PROGRAM IS BEING MADE AVAILABLE AS RECEIVED (WITH
        MINOR REVISION). THERE ARE NO PLANS TO EXPAND ITS
        CAPABILITIES OR TO IMPROVE THE EXISTING FUNCTIONS.
        SOME EXTENSIONS ARE INDICATED IN THE DIRECTIVE LIST BUT
        ARE FLAGGED AS NOT IMPLEMENTED.
    2 - THE PROGRAM WILL GENERATE UNNUMBERED LINES OF UP TO 136
        CHARACTERS EACH.
    3 - THE ??D DIRECTIVE ALLOWS THE PROGRAM TO GENERATE VALID
        INPUT FOR ITSELF.
    4 - EDITOR MAY BE USED TO ADD PAGING TO THE OUTPUT. TO
        FACILITATE THIS, THE OUTPUT FILE SHOULD HAVE A LEFT
        MARGIN OF 2 OR GREATER.

EXECUTION
    FROM BATCH
        COPYR,INPUT,TAPE1.   (OR   ATTACH,TAPE1,....)
        BEGIN,UTILITY,,FORMATR.
        (DO SOMETHING WITH TAPE2)
        7/8/9   EOR
           (TEXT AND OPTIONAL DIRECTIVES, IF COPYR USED)
        6/7/8/9   EOF

    FROM TTY
        ATTACH,TAPE1,....   (INPUT DOCUMENT)
        BEGIN,UTILITY,,FORMATR.
        (DO SOMETHING WITH TAPE2)

    EXECUTE CARD PARAMETERS
        FORMATR,INFILE,OUTFILE,OUTPUT.
            INFILE - INPUT DOCUMENT FILE
            OUTFILE - GENERATED OUTPUT DOCUMENT FILE
            OUTPUT - FTN ERROR MESSAGES

    DEFAULT EXECUTE CARD
        FORMATR,TAPE1,TAPE2,OUTPUT.

    FL NEEDED TO LOAD: 27000B
    FL NEEDED TO RUN : 17000B

```
DATA CARDS
    COL     CONTENTS
    -----   --------
    1-2     ?? - INDICATES A DIRECTIVE
            ANYTHING ELSE - ASSUMED TO BE TEXT DATA
    3  ON   FOR DIRECTIVES ONLY (?? IN 1-2)
            THE FOLLOWING DIRECTIVES ARE SUPPORTED:
            ??C     -  GENERATE COMMENT CARDS (* IN COLUMN 1)
            ??C+    -  SAME AS ??C
            ??C+X   -  GENERATE COMMENT CARDS PUTTING X INTO
                       COLUMN 1 (DEFAULT: *)
            ??C-    -  SUSPEND COMMENT CARD GENERATION (DEFAULT)
            ??D     -  PUT DIRECTIVES INTO OUTPUT
            ??D+    -  SAME AS ??D
            ??D-    -  SUPPRESS DIRECTIVES IN OUTPUT
            ??F     -  FORMATTED MODE
            ??FL,R  -  FORMATTED MODE, OUTPUT LEFT AND RIGHT
                       MARGINS ARE L AND R
                       (DEFAULT: ??F7,72)
            ??IL,R  -  INPUT RECORD SIZE
                       (FROM COLUMN L TO COLUMN R)
                       (DEFAULT: ??I1,72)
            ??P     -  INDENT A NEW PARAGRAPH
            ??P+N   -  LEAVE N BLANK LINES BEFORE INDENTING
                       A NEW PARAGRAPH
                       (NOT IMPLEMENTED; SEE REMARK 1)
            ??S1    -  SINGLE SPACE LISTING (DEFAULT)
            ??S2    -  DOUBLE SPACE LISTING
            ??S3    -  TRIPLE SPACE LISTING
            ??S+N   -  SKIP N BLANK LINES
                       (NOT IMPLEMENTED; SEE REMARK 1)
            ??U     -  UNFORMATTED MODE
                       (COPY CARDS TO NEXT DIRECTIVE)
```

```
INPUT/OUTPUT UNITS
    UNIT #    LFN                    USE
    -------   -------   --------------------------------------------
              OUTPUT    FTN ERROR MESSAGE FILE
       1      TAPE1     INPUT DOCUMENT FILE
       2      TAPE2     GENERATED OUTPUT DOCUMENT FILE
              ZZTTYO    TTY PROMPTER
```

EXAMPLE
    ATTACH,TAPE1,FORMATRTEST,ID=CSYS.
    COPYSR,TAPE1,OUTPUT.   TO LIST ORIGINAL FILE
    BEGIN,UTILITY,,FORMATR.
    COPYR,TAPE2,OUTPUT.   TO LIST FORMATTED FILE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   CONNEC   EOF   MIN0   SHIFT
    PART OF PROGRAM
        DIREC   - PROCESS DIRECTIVES
        FETCH   - EXTRACT NEXT WORD OF TEXT
        GETPARM - GET NUMERIC PARAMETER FROM A DIRECTIVE
        INITLIZ - INITIALIZE THE PROGRAM
        INSERTB - INSERT A BLANK
        MOVIT   - MOVE A RECORD
        PRINTL - WRITE A LINE
    OTHERS
        FSETFIT - SET FTN FIT VALUES
        VFILL   - FILL ARRAY WITH WORD

ARITHMETIC STATEMENT FUNCTIONS
    I11FMT   - FAST I-FORMAT DECODE
    R11FMT   - FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)

AUTHORS
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    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 1974

DATE(S) REVISED
    09/20/76

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYP_.,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'GETOBJ'

PURPOSE
    EXTRACT ONE OBJECT MODULE FROM A SEQUENTIAL OBJECT FILE
    OR AN EDITLIB USER LIBRARY

FUNCTIONAL CATEGORY: K3

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    IF THE OBJECT FILE IS SEQUENTIAL (SUCH AS THE OUTPUT OF A
    COMPILER), THE FIRST OCCURRENCE OF THE SPECIFIED MODULE
    IS EXTRACTED. IF THE OBJECT FILE IS AN EDITLIB USER
    LIBRARY, THE LAST OCCURRENCE IS EXTRACTED.

EXECUTION
    FROM BATCH AND TTY
        ATTACH,TAPE1,....   (INPUT FILE)
        BEGIN,UTILITY,,GETOBJ,,ROUTINE,....

    EXECUTE CARD PARAMETERS
        GETOBJ,INFILE,ROUTINE,OUTFILE,LIB,OUTPUT.
            INFILE - INPUT OBJECT FILE
            ROUTINE - NAME OF DESIRED ROUTINE
                      (1-7 CHARACTERS)
            OUTFILE - WILL CONTAIN EXTRACTED ROUTINE
            LIB   - OMITTED - INFILE IS SEQUENTIAL
                      LIB   - INFILE IS EDITLIB USER LIBRARY
            OUTPUT - FTN ERROR MESSAGES

    DEFAULT EXECUTE CARD
        GETOBJ,TAPE1,RTN,TAPE2,,OUTPUT.

    FL NEEDED TO LOAD: 31000B
    FL NEEDED TO RUN : 21000B

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   ---
              OUTPUT   FTN ERROR MESSAGES
              TAPE1   INPUT OBJECT FILE
              TAPE2   OUTPUT FILE CONTAINING EXTRACTED MODULE

```
SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM     FILESQ     GET        IFETCH     OPENM
        PUT        REMARK     REWND      SHIFT      STOREF
        WEOR
    PART OF PROGRAM
        LOCLIB  - LOCATE MODULE IN AN EDITLIB USER LIBRARY
        LOCSEQ  - LOCATE MODULE IN A SEQUENTIAL FILE
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES

ARITHMETIC STATEMENT FUNCTIONS
    L81FMT  - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
    R21FMT  - FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 11/18/76

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:     UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:     UTILITY
```

PROGRAM 'HEXDMP'

PURPOSE
    DUMP 9-TRACK TAPE IN HEXADECIMAL FORMAT

FUNCTIONAL CATEGORY: J9 K4

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    ACCEPTS VARIABLE LENGTH RECORDS UP TO 5120 CDC CHARACTERS.
    DUMPS SPECIFIED NUMBER OF RECORDS (PRUS IF S TAPE) UP
    TO ONE FILE. TAPE POSITIONING MAY BE DONE BY SKIPF
    CONTROL CARD. AFTER ANY PARITY ERROR, PROGRAM PRINTS
    "PARITY ERROR ON RECORD ..." AND CONTINUES. OUTPUT IS
    RECORD NUMBER AND SIZE FOLLOWED BY LINES OF 120 HEX
    CHARACTERS.

    IN THE SPECIAL CASE WHEN TYPE=1, EACH CDC WORD CONTAINS 10
    HEX DIGITS. EACH 4-BIT HEX DIGIT OCCUPIES THE FIRST 4 BITS
    OF EACH 6-BIT CHARACTER. HEXDMP WILL REMOVE THE EXTRA BITS
    AND PRINT IN GROUPS OF 10 HEX DIGITS.

EXECUTION
    FROM BATCH
        REQUEST,TAPE1,HD,NORING,S,VSN=----.   OR   LABEL,----.
        BEGIN,UTILITY,,HEXDMP,,....

    FROM TTY
        NOT USABLE FROM TTY

    EXECUTE CARD PARAMETERS
        HEXDMP(INFILE,START,NPRUS,OUTPUT,REW,TYPE,PL=NNNN)
            INFILE   - INPUT FILE
            START   - STARTING PRU/RECORD NUMBER (DECIMAL)
                       0 OR OMITTED - START AT BEGINNING OF FILE
            NPRUS   - NUMBER (DECIMAL) OF PRUS/RECORDS TO BE DUMPED
                       (DEFAULT: 9999999 - ALL OF FILE)
            OUTPUT   - LISTABLE OUTPUT
            REW   - INFILE REWIND OPTION
                       A   - REWIND AFTER USE
                       B   - REWIND BEFORE USE
                       R   - REWIND BEFORE AND AFTER USE
                       U   - REWIND BEFORE, REWIND AND UNLOAD
                                AFTER USE
                       OTHER - NO REWIND (DEFAULT)
                       (ANY WORDS BEGINNING WITH THESE LETTERS WILL
                       PRODUCE THE SAME RESULTS)
            TYPE   - 1   - EACH HEX DIGIT IS TO BE FIRST 4 BITS
                                OF EACH 6-BIT CHARACTER (10 HEX
                                DIGITS PER WORD)
                       OTHER - NO SPECIAL HANDLING
            NNNN   - LINE LIMIT IF DESIRED

```
DEFAULT EXECUTE CARD
    HEXDMP(TAPE1,1,9999999,OUTPUT,NOREW)

DEFAULT PL: 5000 LINES

FL NEEDED TO LOAD: 30000B
FL NEEDED TO RUN : 20000B
    (PROGRAM REDUCES TO MINIMUM NEEDED TO RUN)

INPUT/OUTPUT UNITS
   UNIT #     LFN                                 USE
   -------    -------   ----------------------------------------------
              OUTPUT    LISTABLE OUTPUT
      1       TAPE1     9-TRACK TAPE TO BE DUMPED

EXAMPLES
   HEXDMP(TAPE9,1,10)        LIST FIRST 10 RECORDS ON TAPE9
   HEXDMP(,20,5,PL=150)      LIST RECORDS 20 THRU 24 ON TAPE1,
                             UP TO 150 LINES

METHOD
   BUFFER IN, ODD PARITY

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
   PART OF LANGUAGE
       BUFFERIN    LENGTH    UNIT
   PART OF PROGRAM
       HEX1    - EXTRACT 4 OF EACH 6 BITS
       PRT     - NORMAL PRINT
       PRT1    - PRINT FOR TYPE 1
   OTHERS
       GETLFNS - GET ACTUAL LOCAL FILE NAME
       IFMTV   - FAST VARIABLE LENGTH I-FORMAT DECODE
       SETREW  - DECODE REWIND OPTION
       UNLOAD  - UNLOAD,INFILE.

AUTHOR
   NORA TAYLOR      - DTNSRDC CODE 189.1
   SHARON GOOD      - DTNSRDC CODE 1892.1
   DAVID V SOMMER   - DTNSRDC CODE 1892.2

DATE WRITTEN: JULY 1976

DATE(S) REVISED
   OCTOBER 1976
   03/03/77 - DVS - ADD 'TYPE' OPTION
                    ADD TYPE 1 CONVERSION
                    ACTIVATE REWIND OPTION

LOCATION OF DECKS
   SOURCE
       UPDATE LIBRARY:     UTILITYPL,ID=CSYS
   OBJECT
       EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'JOBTIME'

PURPOSE
    PUT JOB CP EXECUTION TIME TO THIS POINT INTO DAYFILE

    FUNCTIONAL CATEGORY: Q0

AUTHOR
    DAVID V SOMMER - NSRDC CODE 1892.2

DATE WRITTEN: 03/10/75

DATE(S) REVISED

REMARKS
    NONE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        REMARK
    OTHERS
        NONE

EXECUTION
    FROM BATCH AND TTY
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        JOBTIME.

    DEFAULT EXECUTE CARD
        JOBTIME.

    FL NEEDED TO LOAD: 21000B

LOCATION OF DECKS
    SOURCE
        TAPE LABELLED CSYSUTILITYPL; P.F. UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

```
PROGRAM 'LINER'

PURPOSE
    COUNT LINES AND PAGES OF A FILE HAVING FIRST CHARACTER
    CARRIAGE CONTROL

    FUNCTIONAL CATEGORY:    Q0

REMARKS
    NONE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND        CLOSEM     DATE      FILESQ     GET
        IFETCH     OPENM      RECOVR    REMARK     SHIFT
        TIME
    PART OF PROGRAM
        EOJ      - ABNORMAL TERMINATION ROUTINE
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        LVLEOR  - GET EOR LEVEL FROM FIT
        SETREW  - DECODE REWIND OPTION

METHOD
    CHAR    ACTION
    ----    ------
     1      ADD 1 TO PAGE COUNTER; RESTART LINE COUNTER
    SPACE   ADD 1 TO LINE COUNTER
     0      ADD 2 TO LINE COUNTER
     -      ADD 3 TO LINE COUNTER
    OTHER   IGNORED

INPUT/OUTPUT UNITS
    UNIT #     LFN                                USE
    -------    -------    ------------------------------------------
               TAPE1      INPUT FILE
               OUTPUT     LISTABLE OUTPUT

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        LDSET,LIB=UTILITY.
        ATTACH,TAPE1, . . .    FILE TO BE PROCESSED
        LINER.

    FROM TTY
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        ATTACH,TAPE1, . . .    FILE TO BE PROCESSED
        LINER.
```

```
EXECUTE CARD PARAMETERS
    LINER,TAPE1,OUTPUT,REW.
        TAPE1   - FILE TO BE PROCESSED
        OUTPUT  - LISTABLE OUTPUT
        REW     - REWIND OPTION FOR TAPE1
                A       - REWIND AFTER USE
                B       - REWIND BEFORE USE
                R       - REWIND BEFORE AND AFTER USE
                U       - REWIND BEFORE, REWIND AND UN_OAD
                          USE
                OTHER - NO REWIND  (DEFAULT)
                (ANY WORDS BEGINNING WITH THESE LETTERS
                WILL PRODUCE THE SAME RESULTS)

    DEFAULT EXECUTE CARD
        LINER,TAPE1,OUTPUT,NOREWIND.

    FL NEEDED TO LOAD: 27000B
    FL NEEDED TO RUN : 17000B

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 05/31/73

DATE(S) REVISED
    01/10/75
    03/22/76 - CHANGE TO RECORD MANAGER; THRU EOI; NOREWIND
    03/23/76 - CORRECT EOR PROBLEM

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:    UTILITYPL,ID=CLIB
    OBJECT
        EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'LINERL'

PURPOSE
    LIST A DOCUMENT (CARRIAGE CONTROL IN COLUMN 1, ZERO BYTE
    TERMINATED RECORDS) WITH RECORD COUNT AND COUNT OF LINES ON
    EACH PAGE. LIST THRU END-OF-INFORMATION.

FUNCTIONAL CATEGORY: 01   Q0

LANGUAGE: FORTRAN IV

REMARKS
    MAY BE USED TO LIST A DOCUMENT CREATED BY PROGRAM 'DOC'
    TO ASSIST IS DEFINING PAGES BEFORE USING PROGRAM 'DOCIT'
    TO COMPLETE THE DOCUMENT.

    EOR, EOF AND EOI ARE LISTED AND CAUSE LINE COUNT TO BE RESET
    TO 0 (ZERO).

EXECUTION
    FROM BATCH
        BEGIN,UTILITY,,LINERL,INFILE.

    FROM TTY
        ATTACH OR OTHERWISE CREATE INFILE.
        BEGIN,UTILITY,,LINERL,INFILE,OUT,R.
        ROUTE,OUT,DC=PR,....

    EXECUTE CARD PARAMETERS
        LINERL,INFILE,OUTPUT,REW,LPI,START,INCR.
            INFILE - INPUT DOCUMENT FILE
            OUTPUT - LISTABLE OUTPUT
            REW   - INFILE REWIND OPTION
                        A   - REWIND AFTER USE
                        B   - REWIND BEFORE USE
                        R   - REWIND BEFORE AND AFTER USE
                        U   - REWIND BEFORE, REWIND AND UNLOAD
                                AFTER USE
                        OTHER - NO REWIND (DEFAULT)
                        (ANY WORDS BEGINNING WITH THESE LETTERS WILL
                        PRODUCE THE SAME RESULTS)
            LPI   - LINES PER INCH
                        6   - 6 LINES PER INCH
                        ANYTHING ELSE - 8 LINES PER INCH (DEFAULT)
            START   - STARTING LINE NUMBER (DEFAULT: 1)
            INCR   - LINE NUMBER INCREMENT (DEFAULT: 1)

    DEFAULT EXECUTE CARD
        LINERL,TAPE1,OUTPUT,NOREW,8,1,1.

    FL NEEDED TO LOAD: 27000B
    FL NEEDED TO RUN : 17000B

```
INPUT/OUTPUT UNITS
   UNIT  #    LFN                              USE
   -------    -------    ------------------------------------------
              OUTPUT     LISTABLE OUTPUT
              TAPE1      INPUT DOCUMENT FILE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
   PART OF LANGUAGE
      AND         CLOSEM     DATE       FILESQ    GET
      IFETCH      OPENM      TIME
   OTHERS
      GETLFNS  - GET ACTUAL LOCAL FILE NAMES
      IFMTV    - FAST VARIABLE I-FORMAT DECODE
      SETREW   - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
   L11FMT   - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)

AUTHOR
   DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 08/31/76

DATE(S) REVISED

LOCATION OF DECKS
   SOURCE
      UPDATE LIBRARY:    UTILITYPL,ID=CSYS
   OBJECT
      EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'LISTBIN'

PURPOSE
    LIST RELOCATABLE BINARY MODULES IN ONE OR MORE FILES

FUNCTIONAL CATEGORY: Q7

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    INPUT FILE IS PROCESSED UNTIL:
        A) SPECIFIED NUMBER OF FILES, OR
        B) DOUBLE EOF

EXECUTION
    FROM BATCH
        ATTACH,TAPE1, . . .   (FILE TO BE LISTED)
        BEGIN,UTILITY,,LISTBIN.

    FROM TTY
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        ATTACH,TAPE1, . . .   (FILE TO BE LISTED)
        CONNECT,OUTPUT.   OR   LISTBIN,,ANY.
        LISTBIN.   ROUTE,ANY,DC=PR,....

    EXECUTE CARD PARAMETERS
        LISTBIN,INFILE,OUTPUT,NFILES,REW,EXTEND,ALPHA.
            INFILE - FILE TO BE LISTED
            OUTPUT - PRINTER OUTPUT
            NFILES - NUMBER OF FILES TO BE LISTED
                      (OMITTED OR INVALID = 1 FILE)
                      (NOTE: PROCESSING WILL STOP IF DOUBLE
                      EOF READ BEFORE SPECIFIED NUMBER OF FILES)
            REW   - REWIND OPTION FOR TAPE1
                      A   - REWIND AFTER USE
                      B   - REWIND BEFORE USE
                      R   - REWIND BEFORE AND AFTER USE
                      U   - REWIND BEFORE, REWIND AND UNLOAD
                              AFTER USE
                      OTHER - NO REWIND (DEFAULT)
                      (ANY WORDS BEGINNING WITH THESE LETTERS WILL
                      PRODUCE THE SAME RESULTS)
            EXTEND - OMITTED OR 'NO' - DO NOT LIST DATE, TIME,
                                        OS, ETC.
                      ANYTHING ELSE   - LIST DATE, TIME, OS, ETC.
                      (OMIT FOR TTY AS OUTPUT IS MORE THAN 72
                      CHARACTERS)
            ALPHA   - ALPHABETICAL LIST OF OBJECT MODULES OPTION
                      OMITTED - NO ALPHABETICAL LIST
                      TTY   - ALPHABETICAL LIST TO FIT TTY
                      OTHER   - WIDE PAGE LIST

    DEFAULT EXECUTE CARD
        LISTBIN,TAPE1,OUTPUT,1,NOREWIND.

```
          DEFAULT PL: 5000 LINES

     FL NEEDED TO LOAD: 31000B
     FL NEEDED TO RUN : 21000B
          (PROGRAM ADJUSTS CORE UP AND DOWN AS REQUIRED)

INPUT/OUTPUT UNITS
     UNIT  #     LFN                        USE
     -------     -------     ----------------------------------------------
                 OUTPUT      LISTABLE OUTPUT
          1      TAPE1       FILE TO BE LISTED

METHOD
     1) IF REQUESTED, FILE IS REWOUND.
     2) THE FIRST 200 WORDS OF EACH LOGICAL RECORD ARE READ IN.
        2A) WORD 1 IS TESTED FOR PRFX TABLE (WORD 0 OF TABLE
            STARTS 7700B).  IF NOT, THIS IS NOT AN OBJECT MODULE,
            FIRST 4 WORDS ARE PRINTED (PRECEDED BY ')').
            IT IF IS AN OBJECT MODULE, THE NAME IS TAKEN FROM
            CHARACTERS 1-7 OF WORD 1 OF THE PREFIX TABLE.
        2B) TEST FOR PRESENCE OF PIDL (3400), ASCM(5000),
            APCM(5300) OR EAPCM (5400) TABLES AND GET OVERLAY
            NUMBER AND ROUTINE LENGTH, IF POSSIBLE.
        2C) GO BACK TO 2) UNTIL SPECIFIED NUMBER OF EOF'S OR
            DOUBLE EOF.
     3) IF REQUESTED, THE FILE IS REWOUND OR UNLOADED.

     REFERENCE:  60344200 - LOADER REFERENCE MANUAL - CHAPTER 8

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
     DATE        LENGTH      MOD         RECOVR      REMARK
     SHIFT       TIME        UNIT
     PART OF LANGUAGE
        EOJ     - ABNORMAL TERMINATION ROUTINE
        PRTBL   - PRINT ONE PAGE OF ALPHABETICAL LIST
     OTHERS
        ASORTMV - SORT 2-DIMENSIONAL ARRAY USING MOVLEV
        GETLFNS - GET ACTUAL FILE NAMES
        IFMTV   - FAST I-FORMAT DECODE
        REDUCE  - ADJUST CORE UP AND DOWN
        SETREW  - DECODE REWIND OPTION
        UNLOAD  - RETURN,TAPE1.

ARITHMETIC STATEMENT FUNCTIONS
     FAST A-FORMAT DECODE (LEFT-ADJ, BLANK-FILLED)
        A71FMT
     FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
        L21FMT      L38FMT      L71FMT
     FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
        R13FMT      R14FMT      R21FMT      R23FMT      R35FMT
        R33FMT      R47FMT      R51FMT      R56FMT
```

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 11/18/74

DATE(S) REVISED
    01/14/75
    03/26/75
    04/30/75
    03/03/76
    06/23/76
    12/13/76 - ADD 54-TABLE PROCESSING
    03/30/77 - ADD ALPHABETICAL LIST OPTION

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'LISTCMP'

PURPOSE
    LIST AN UPDATE COMPILE FILE, EACH DECK BEGINNING ON A NEW
    PAGE WITH A BANNER PAGE PRECEDING IT

    FUNCTIONAL CATEGORIES: Q7 01

REMARKS
    A NEW DECK BEGINS:
        A) AFTER END-OF-SECTION OR END-OF-PARTITION;
        B) WITH CHANGE OF DECK NAME (COL 74-82) ONLY IF PREVIOUS
            CARD WAS FORTRAN END CARD ('   END   ' IN
            COL 1-20) OR COMPASS END CARD ('END ' IN COL 11-14).
    THE CONDITIONS FOR B) ALLOW DECKS TO HAVE *COMDECK CALLS
    WITHOUT TRIGGERING A NEW DECK. (*COMDECK CALLS HAVE THE
    COMDECK NAME IN 74-82, WHICH IS USUALLY DIFFERENT FROM THE
    MAIN DECK NAME.)

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM   FILESQ   GET   IFETCH   MOD
        OPENM   RECOVR   REMARK   SHIFT
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        BANR   - PRINT BANNER PAGE
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        MFETCH   - READ WORD IN USER'S FL
        REDUCE   - REDUCE CORE TO MINIMUM NEEDED TO RUN
        SETREW   - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
    A94FMT   - FAST A-FORMAT DECODE (LEFT-ADJ, BLANK-FILLED)
    L11FMT   - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
    L41FMT   - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)

LANGUAGE: FORTRAN IV

INPUT/OUTPUT UNITS
    FORTRAN   LOCAL
    LOGICAL   FILE
    U N I T   NAME   USE
    -------   -------   --
               TAPE1   INPUT COMPILE FILE
               OUTPUT   LISTABLE OUTPUT

```
EXECUTION
    FROM BATCH
        ATTACH,OLDPL,...
        UPDATE,P,...
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        LISTCMP,COMPILE.

    FROM TTY
        ATTACH,OLDPL,....
        UPDATE,P,....
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        LISTCMP,COMPILE,OUT.
        DISPOSE,OUT,PR=XYY.

    EXECUTE CARD PARAMETERS
        LISTCMP,INFILE,OUTPUT,REW,LPI.
            INFILE  - INPUT INFILE
            OUTPUT  - LISTABLE OUTPUT
            REW     - REWIND OPTION FOR COMPILE FILE
                    A     - REWIND AFTER USE
                    B     - REWIND BEFORE USE
                    P     - REWIND BEFORE AND AFTER USE
                            (DEFAULT)
                    U     - REWIND BEFORE, REWIND AND UNLOAD
                            AFTER USE
                    OTHER - NO REWIND
                    (ANY WORDS BEGINNING WITH THESE LETTERS WILL
                    PRODUCE THE SAME RESULTS)
            LPI     - LINES PER INCH FOR OUTPUT LISTING
                    OMITTED OR 'EIGHT' OR '8' - 8 LPI
                    ANYTHING ELSE - 6 LPI

    DEFAULT EXECUTE CARD
        LISTCMP,TAPE1,OUTPUT,REWIND,8.

    FL NEEDED TO LOAD: 31000B
    FL NEEDED TO RUN : 21000B
        (PROGRAM REDUCES TO MINIMUM NEEDED TO RUN)

AUTHOR
    DAVID V SOMMER - NSRDC CODE 1892.2

DATE WRITTEN: 07/09/75

DATE(S) REVISED
    01/07/76

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:  UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:  UTILITY
```

PROGRAM 'LISTEOI'

PURPOSE
    LIST A FILE INSERTING *EOR, *EOF, *EOI WHERE APPROPRIATE

    FUNCTIONAL CATEGORY: 01

REMARKS
    LISTING IS TO END-OF-INFORMATION.
    RECORD LENGTH IS UP TO 90 CHARACTERS.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM   CONNEC   FILESQ   GET   IFETCH
        OPENM   RECOVR   REMARK   SHIFT
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        MSETFIT - SET FTN FIT FIELD
        SETREW - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
    NONE

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   --
        5   ZZTTY   TTY OUTPUT
                OUTPUT   PRINTER OUTPUT
                TAPE1   FILE TO BE LISTED

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        ATTACH,TAPE1, . . .   (FILE TO BE LISTED)
        LISTEOI.

    FROM TTY
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        ATTACH,TAPE1, . . .   (FILE TO BE LISTED)
        LISTEOI,,OUT.
        ROUTE,OUT,DC=PR,....

```
EXECUTE CARD PARAMETERS
    LISTEOI,INFILE,OUTPUT,REW,PAGING.
        INFILE - INPUT FILE TO BE LISTED
        OUTPUT - LISTABLE OUTPUT
        REW    - INFILE REWIND OPTION
                 A     - REWIND AFTER USE
                 B     - REWIND BEFORE USE
                 R     - REWIND BEFORE AND AFTER USE
                 U     - REWIND BEFORE, REWIND AND UNLOAD
                         AFTER USE
                 OTHER - NO REWIND (DEFAULT)
                 (ANY WORDS STARTING WITH THESE LETTERS WILL
                 PRODUCE THE SAME RESULTS)
        PAGING - IF OMITTED OR 'NEWPAG', EACH FILE STARTS
                 ON A NEW PAGE.
                 IF ANYTHING ELSE, CONTINUE ON SAME PAGE.

    DEFAULT EXECUTE CARD
        LISTEOI,TAPE1,OUTPUT,NOREWIND,NEWPAG.

    FL NEEDED TO LOAD: 30000B
    FL NEEDED TO RUN : 20000B

AUTHOR
    DAVID V SOMMER - NSRDC CODE 1892.2

DATE WRITTEN: 05/29/74

DATE(S) REVISED
    05/28/75
    04/06/76

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:  UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:  UTILITY
```

PROGRAM 'LISTZ'

PURPOSE
    LIST ZERO BYTE TERMINATED RECORDS (UP TO 110 CHARACTERS PER
    RECORD) WITH RECORD NUMBER AND RECORD LENGTHS

FUNCTIONAL CATEGORY: 01

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    NONE

EXECUTION
    FROM BATCH
        ATTACH,TAPE1,....   FILE TO BE LISTED
        BEGIN,UTILITY,,LISTZ.

    FROM TTY
        ATTACH,TAPE1,....   FILE TO BE LISTED
        BEGIN,UTILITY,,LISTZ,,OUT.
        ROUTE,OUT,DC=PR,....

    EXECUTE CARD PARAMETERS
        LISTZ,INFILE,OUTPUT,REW,LPI,START,INCR.
            INFILE - INPUT FILE TO BE LISTED
            OUTPUT - LISTABLE OUTPUT
            REW   - INFILE REWIND OPTION
                        A   - REWIND AFTER USE
                        B   - REWIND BEFORE USE
                        R   - REWIND BEFORE AND AFTER USE
                        U   - REWIND BEFORE, REWIND AND
                                UNLOAD AFTER USE
                        OTHER - NO REWIND (DEFAULT)
                        (ANY WORDS STARTING WITH THESE LETTERS WILL
                        PRODUCE THE SAME RESULTS)
                        (IF ABEND, INFILE IS NOT REWOUND)
            LPI   - LINES PER INCH
                        6   - 6 LINES PER INCH
                        ANYTHING ELSE - 8 LINES PER INCH (DEFAULT)
            START   - STARTING LINE NUMBER (DEFAULT: 1)
                        (USE 'E' FOR STANDARD EDITOR SEQUENCING:
                         START=100, INCR=10)
                        (USE 'U' FOR STANDARD UPDATE SEQUENCING:
                         START=2, INCR=1)
            INCR   - LINE NUMBER INCREMENT (DEFAULT: 1)
                        (IF START=E, INCR=10;
                         IF START=U, INCR=1)

    DEFAULT EXECUTE CARD
        LISTZ,TAPE1,OUTPUT,NOREW,8,1,1.

    FL NEEDED TO LOAD: 30000B
    FL NEEDED TO RUN : 20000B

```
INPUT/OUTPUT UNITS
    UNIT  #     LFN                               USE
    -------     -------     -------------------------------------------
                OUTPUT     LISTABLE OUTPUT
                TAPE1      INPUT FILE TO BE LISTED

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM     DATE        FILESQ      GET        IFETCH
        MAX0       OPENM       RECOVR      REMARK     TIME
    PART OF PROGRAM
        EOJ       - ABNORMAL TERMINATION ROUTINE
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        IFMTV   - FAST I-FORMAT DECODE
        LASTC   - FIND LAST NON-BLANK CHARACTER IN ARRAY
        SETREW  - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
    L51FMT  - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 04/12/76

DATE(S) REVISED
    06/11/76 - ADD LINES PER INCH OPTION
    07/29/76 - ADD START AND INCREMENT OPTIONS
    09/30/76 - ADD RECORD LENGTH TO PRINTOUT
    12/14/76 - PROCESS TO EOI
    02/04/77 - ADD START=E, START=U
    02/22/77 - INCREASE LINE LENGTH TO I3
    05/06/77 - ADD DAYFILE MESSAGE WITH # LINES AND LONGEST LINE

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:    UTILITYP_,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'LIST1'

PURPOSE
   LIST (CENTERED) ONE COPY OF CARDS (UP TO 90 CHARACTERS)
   HAVING CARRIAGE CONTROL IN COLUMN 1. OPTIONALLY PRINT CARD,
   PAGE AND LINE COUNTS AND LINE LENGTHS.

FUNCTIONAL CATEGORY: 01

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
   WHEN LINES PARAMETER OMITTED, LIST1 WILL LIST THE FORM
   CENTERED ON WIDE PAPER.

   WHEN LINES PARAMETER SPECIFIED, IN ADDITION TO PRINTING THE
   FORM, THE CARD NUMBER, PAGE NUMBER OF THE FORM, AND LINE
   NUMBER ON THE PAGE ARE PRINTED IN FRONT OF THE LINE AND THE
   LINE LENGTH (POSITION OF THE LAST NON-BLANK CHARACTER) IS
   PRINTED AFTER EACH LINE. LINES LONGER THAN A SPECIFIED
   LENGTH MAY BE FLAGGED.

EXECUTION
   FROM BATCH
      BEGIN,UTILITY,,LIST1,INPUT.
      ' 7/8/9   EOR
         (CARDS TO BE LISTED)
      " 6/7/8/9   EOF

   FROM TTY
      ATTACH,IN,....   (FILE TO BE LISTED)
      BEGIN,UTILITY,,LIST1,IN,OUT.
      ROUTE,OUT,DC=PR,....

   EXECUTE CARD PARAMETERS
      LIST1,INFILE,OUTPUT,REW,LINES,START,INCR,FLAG.
         INFILE - INPUT FILE TO BE LISTED
         OUTPUT - LISTABLE OUTPUT
         REW   - INFILE REWIND OPTION
                     A   - REWIND AFTER USE
                     B   - REWIND BEFORE USE
                     R   - REWIND BEFORE AND AFTER USE
                     U   - REWIND BEFORE, REWIND AND UNLOAD
                            AFTER USE
                   OTHER - NO REWIND (DEFAULT)
                   (ANY WORDS BEGINNING WITH THESE LETTERS WILL
                   PRODUCE THE SAME RESULTS)
         LINES   - OPTION TO PRINT CARD, PAGE AND LINE COUNTS
                   OMITTED OR 'NOLINE' - DO NOT PRINT COUNTS
                   ANYTHING ELSE   - PRINT COUNTS
         START   - STARTING CARD COUNT (WHEN COUNTS PRINTED)
                   (DEFAULT: 1)
         INCR   - CARD COUNT INCREMENT (WHEN COUNTS PRINTED)
                   (DEFAULT: 1)
         FLAG   - FLAG LONG LINES (WHEN COUNTS PRINTED)
                   OMITTED - FLAG LINES LONGER THAN 72 CHAR
                   1-90   - FLAG LINES LONGER THAN THIS
                   OTHER   - DO NOT FLAG LINES

```
DEFAULT EXECUTE CARD
    LIST1,TAPE1,OUTPUT,NOREW,NOLINE,1,1,72.

FL NEEDED TO LOAD: 30000B
FL NEEDED TO RUN : 20000B

DATA CARDS
   COL     CONTENTS
  -----    ---------
    1      CARRIAGE CONTROL
           1     - NEW PAGE
           SPACE - NEXT LINE
           0     - LEAVE 1 BLANK LINE
           -     - LEAVE 2 BLANK LINES (NOT FOR 2OOUT)
           +     - PRINT ON SAME LINE
   2-90    LINE TO BE PRINTED

INPUT/OUTPUT UNITS
   UNIT #     LFN                            USE
  --------   --------   --------------------------------------------
             OUTPUT     LISTABLE OUTPUT
             TAPE1      INPUT FILE TO BE LISTED
             DAYFILE    NUMBER OF RECORDS AND LONGEST LINE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
   PART OF LANGUAGE
        AND        CLOSEM    FILESQ    GET       IFETCH
        MAXO       OPENM     OR        RECOVR    REMARK
   PART OF PROGRAM
        EOJ     - ABNORMAL TERMINATION ROUTINE
   OTHERS
      GETLFNS - GET ACTUAL LOCAL FILE NAMES
      IFMTV   - FAST I-FORMAT DECODE
      LASTC   - FIND LAST NON-BLANK IN ARRAY
      SETREW  - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
   L11FMT  - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
   R92FMT  - FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
```

```
AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 10/17/73

DATE(S) REVISED
    11/16/73
    12/07/73
    02/03/75
    08/28/75
    09/02/76 - ADD LINE OPTION
    09/07/76 - ADD LINE LENGTH PRINTOUT
    05/06/77 - ADD DAYFILE MESSAGE WITH NUMBER OF RECORDS AND
               LONGEST LINE

LOCATION OF DECKS
    SOURCE
       UPDATE LIBRARY:    UTILITYPL,ID=CSYS
    OBJECT
       EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'LIST2'

PURPOSE
    SINGLE/DOUBLE SPACE LISTING, 6 OR 8 LINES PER INCH,
    WITH OPTIONAL SKIP OVER PERFORATION AT BOTTOM OF PAGE
    (FIRST 120 CHARACTERS)

FUNCTIONAL CATEGORY: 01

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    CONTROL INFORMATION IS PASSED TO PROGRAM VIA EXECUTE
    STATEMENT OR FIRST CARD OF INPUT.

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        LOSET,LIB=UTILITY.
        LIST2,,,<PARAMETERS>.
        7/8/9   EOR
           (DECK TO BE LISTED)
        6/7/8/9   EOF

    FROM TTY
        ATTACH,FILE,....   (FILE TO BE LISTED)
        BEGIN,UTILITY,,LIST2,FILE,OUT,<PARAMETERS>.
        ROUTE,OUT,DC=PR,....

    EXECUTE CARD PARAMETERS
        LIST2,INPUT,OUTPUT,SPACING,REW,LPI,PAGING.
            INPUT   - FILE TO BE LISTED
            OUTPUT - LISTABLE OUTPUT
            SPACING - SPACING/CONTROL CARD OPTION
                    0   - CONTROL INFORMATION IS ON FIRST
                             CARD ON INPUT FILE
                    2   - DOUBLE SPACING
                    OTHER - SINGLE SPACING
            REW   - INPUT REWIND OPTION
                    A   - REWIND AFTER USE
                    B   - REWIND BEFORE USE
                    R   - REWIND BEFORE AND AFTER USE
                    U   - REWIND BEFORE AND REWIND AND
                             UNLOAD AFTER USE
                    OTHER - NO REWIND (DEFAULT)
                    (NOTE: IF INPUT FILE IS 'INPUT' AND/OR
                    SPACING IS '0', 'NO REWIND' IS FORCED.)
            LPI   - LINES PER INCH
                    8   - 8 LINES PER INCH
                    OTHER - 6 LINES PER INCH (DEFAULT)
            PAGING - PAGING OPTION
                    R   - SKIP OVER PERFORATION AT BOTTOM OF
                             PAGE
                    OTHER - DO NOT SKIP (DEFAULT)

    DEFAULT EXECUTE CARD
        LIST2,INPUT,OUTPUT,SINGLE,NOREW,6,SINGLE,NOSKIP.

```
                    FL NEEDED TO LOAD: 36000B
                    FL NEEDED TO RUN : 26000B

                    DEFAULT PL: 5000 LINES

               DATA CARD (IF SPACING=0)
                    COL    CONTENTS
                    ---    --------
                     1     SPACING OPTION
                           2      - DOUBLE SPACING
                           OTHER - SINGLE SPACING
                     2     LINES PER INCH
                           8      - 8 LINES PER INCH
                           OTHER - 6 LINES PER INCH
                     3     PAGING OPTION
                           R      - SKIP OVER PERFORATION AT BOTTOM OF
                                    PAGE
                           OTHER - DO NOT SKIP

               INPUT/OUTPUT UNITS
                    UNIT #    LFN                          USE
                    -------   -------   -------------------------------------------
                              INPUT     FILE TO BE LISTED
                              OUTPUT    LISTABLE OUTPUT

               SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
                    PART OF LANGUAGE
                         CLOSEM    FILESQ     GET        IFETCH     OPENM
                         RECOVR    REMARK     SHIFT
                    PART OF PROGRAM
                         EOJ       - ABNORMAL TERMINATION ROUTINE
                    OTHERS
                         GETLFNS - GET ACTUAL LOCAL FILE NAMES
                         LASTC   - FIND LAST NON-BLANK
                         SETREW  - DECODE REWIND OPTION

               ARITHMETIC STATEMENT FUNCTIONS
                    FAST L-FORMAT DECODES (LEFT-ADJ, ZERO-FILLED)
                         L11FMT     L12FMT     L13FMT

               AUTHOR
                    DAVID V SOMMER - DTNSRDC CODE 1892.2

               DATE WRITTEN: 08/15/75

               DATE(S) REVISED
                    08/18/75
                    03/21/77 - GENERAL IMPROVEMENTS

               LOCATION OF DECKS
                    SOURCE
                         UPDATE LIBRARY:  UTILITYPL,ID=CSYS
                    OBJECT
                         EDITLIB USER LIBRARY:  UTILITY
```

PROGRAM 'LIST3'

PURPOSE
    LIST FIRST (UP TO 90-CHARACTER, ZERO BYTE TERMINATED) RECORD
    IN EACH LOGICAL RECORD THROUGH EOI

    FUNCTIONAL CATEGORY: 01

REMARKS
    NONE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM   DATE   FILESQ   GET   IFETCH
        OPENM   RECOVR   SHIFT   TIME
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        SETREW - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
    NONE

LANGUAGE: FORTRAN IV

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   --
                OUTPUT   LISTABLE OUTPUT
                TAPE1   INPUT FILE TO BE LISTED

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        ATTACH,TAPE1,....   (FILE TO BE LISTED)
        LDSET,LIB=UTILITY.
        LIST3.

    FROM TTY
        ATTACH,UTILITY.
        ATTACH,TAPE1,....   (FILE TO BE LISTED)
        LIBRARY,UTILITY.
        LIST3,,OUT.
        ROUTE,OUT,DC=PR,....

```
EXECUTE CARD PARAMETERS
    LIST3,INFILE,OUTPUT,REW,EOR.
        INFILE   - INPUT FILE TO BE LISTED
        OUTPUT   - LISTABLE OUTPUT
        REW      - INFILE REWIND OPTION
                A       - REWIND AFTER USE
                B       - REWIND BEFORE USE
                R       - REWIND BEFORE AND AFTER USE
                          (DEFAULT)
                U       - REWIND BEFORE, REWIND AND UNLOAD
                          AFTER USE  (IF JOB ABENDS, U IS
                          CHANGED TO R)
                OTHER - NO REWIND
                (ANY WORDS BEGINNING WITH THESE LETTERS WILL
                PRODUCE THE SAME RESULTS)
        EOR      - ONE OF THE FOLLOWING:
                OMITTED OR EOR - PRINT EOR/LEVEL NUMBER
                    AND EOF ON SEPARATE LINE
                EOF - PRINT EOR (WITHOUT LEVEL NUMBER) ON
                    DATA LINE, EOF ON SEPARATE LINE
                N OR NO - DO NOT PRINT EOR/EOF INFORMATION
                ANYTHING ELSE - PRINT EOR/EOF ON DATA LINE
                    (NO EOR LEVEL NUMBER)

    DEFAULT EXECUTE CARD
        LIST3,TAPE1,OUTPUT,REWIND.

    FL NEEDED TO LOAD: 26000B
    FL NEEDED TO RUN : 17000B

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 11/24/75

DATE(S) REVISED
    12/22/75
    03/22/76
    05/13/76 - INCREASE TO 90 CHARACTERS

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:   UTILITYPL,ID=CLIB
    OBJECT
        EDITLIB USER LIBRARY:   UTILITY
```

PROGRAM 'LIST4'

PURPOSE
    LIST UNIT RECORDS, THRU EOI, WHICH HAVE '1' IN COLUMN 1

    FUNCTIONAL CATEGORY: 01

REMARKS
    NONE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM   DATE   FILESQ   GET   IFETCH
        OPENM   RECOVR   SHIFT   TIME
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        IOPEN   - TEST FOR RM FILE OPEN
        SETREW - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
    L11FMT - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)

LANGUAGE: FORTRAN IV

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   --
              OUTPUT   LISTABLE OUTPUT
              TAPE1   INPUT FILE TO BE LISTED

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        ATTACH,TAPE1,....   (FILE TO BE LISTED)
        LDSET,LIB=UTILITY.
        LIST4.

    FROM TTY
        ATTACH,UTILITY.
        ATTACH,TAPE1,....   (FILE TO BE LISTED)
        LIBRARY,UTILITY.
        LIST4,,OUT.
        ROUTE,OUT,DC=PR,....

```
EXECUTE CARD PARAMETERS
   LIST4,INFILE,OUTPUT,REW.
      INFILE  - INPUT FILE TO BE LISTED
      OUTPUT  - LISTABLE OUTPJT
      REW     - INFILE REWIND OPTION
           A      - REWIND AFTER USE
           B      - REWIND BEFORE USE
           R      - REWIND BEFORE AND AFTER USE
                    (DEFAULT)
           U      - REWIND BEFORE, REWIND AND UNLOAD
                    AFTER USE
           OTHER - NO REWIND
           (ANY WORDS BEGINNING WITH THESE LETTERS WILL
           PRODUCE THE SAME RESULTS)

   DEFAULT EXECUTE CARD
      LIST4,TAPE1,OUTPUT,REWIND.

   FL NEEDED TO LOAD: 26000B
   FL NEEDED TO RUN : 17000B

AUTHOR
   DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 12/22/75

DATE(S) REVISED

LOCATION OF DECKS
   SOURCE
      UPDATE LIBRARY:    UTILITYPL,IO=CLIB
   OBJECT
      EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'MANYDOC'

PURPOSE
    EXTRACT (PRINT) TWO OR MORE DOCUMENTS FROM A DOCUMENTATION
    FILE

FUNCTIONAL CATEGORY: Q6

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    DOCUMENTS MAY BE REQUESTED IN ANY ORDER BUT WILL BE PRINTED
    IN THE ORDER IN WHICH THEY OCCUR IN THE FILE.
    DOCUMENTATION FILE IS COMPATIBLE WITH AN UPDATE 'SOURCE'
    FILE OF *DECK'S ONLY.
    TO EXTRACT ONLY ONE DOCUMENT, USE PROGRAM 'PROGDOC'.

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        MANYDOC,LIBRARY,ID,,OUTPUT.
        *   7/8/9   EOR
            (DATA CARDS)
        "   6/7/8/9   EOF

    FROM TTY
        CONNECT,TTY
        BEGIN,UTILITY,,MANYDOC,LIBRARY,ID,TTY,OUT,,OUT.
            (ENTER DATA CARDS - THERE IS NO PROMPTING)
            (END WITH PERCENT EOF)
        ROUTE,OUT,DC=PR,....

    EXECUTE CARD PARAMETERS
        MANYDOC,LIBRARY,ID,INPUT,OUTFILE,LEFT,OUTPUT,DOCFILE.
            LIBRARY - FIRST PART OF DOCUMENTATION FILE PFN.
                      FULL PFN IS LIBRARY_DOCUMENTATION.
            ID   - ID UNDER WHICH DOCUMENTATION IS CATALOGED
                      (DEFAULT: SYSTEM PUBLIC ACCESS ID)
            INPUT   - INPUT DATA CARDS
            OUTFILE - OUTPUT FILE OF SELECTED DOCUMENTS
                      (NOT REWOUND)
            LEFT   - PRINT CENTERING
                      OMITTED OR 'LEFT' - LEFT-JUSTIFIED ON PAGE
                      OTHER   - CENTERED ON LARGE PAGE
                      (DEFAULT: LEFT-JUSTIFIED)
            OUTPUT - SUMMARY OF REQUESTS
                      (MAY BE SAME AS OUTFILE)
            DOCFILE - IF THE USER HAS PREVIOUSLY ATTACHED A
                      DOCUMENTATION FILE, PLACE LFN HERE AND OMIT
                      THE FIRST 2 PARAMETERS ('LIBRARY' AND 'ID').
                      WHEN THIS PARAMETER IS USED AND IS NOT
                      'ZZDOC', THE FILE IS NOT RETURNED AT END OF
                      EXECUTION.

```
DEFAULT EXECUTE CARD
    MANYDOC,*,*---*,INPUT,TAPE1,LEFT,OUTPUT,ZZDOC.

DEFAULT PL: 15000 LINES

FL NEEDED TO LOAD: 36000B
FL NEEDED TO RUN : 26000B MINIMUM
    (PROGRAM ADJUSTS CORE AS REQUIRED)

DATA CARDS
    COL     CONTENTS
    -----   --------
    1-7     NAME OF DESIRED DOCUMENT

ERROR MESSAGES
    DOCUMENTATION FILE EMPTY
        FILE WAS FOUND BUT CONTAINED NO INFORMATION
    DOCUMENTATION FILE NOT FOUND
        REQUESTED DOCUMENTATION FILE IS NOT IN THE SYSTEM
    NO DOCUMENTS FOUND
        NONE OF THE REQUESTED DOCUMENTS WAS IN THE FILE
    NO DOCUMENTS REQUESTED
        NO DATA CARDS WERE ENCOUNTERED

INPUT/OUTPUT UNITS
    UNIT #     LFN                           USE
    -------    --------   ------------------------------------------
               INPUT      DATA CARD INPUT FILE
               OUTPUT     LISTABLE OUTPUT (SUMMARY OF REQUESTS)
               TAPE1      OUTPUT FILE OF SELECTED DOCUMENTS
                          (NOTE: OUTPUT AND TAPE1 MAY BE THE SAME
                          FILE)
               ZRECORD    PERMANENT RECORD OF REQUEST
                          (ATTACHED AND RETURNED WITHIN PROGRAM)
               ZZDOC      FILE CONTAINING DOCUMENTATION
                          (ATTACHED AND RETURNED WITHIN PROGRAM)
                          (IF USER REPLACES THE FILE NAME AT
                          EXECUTION TIME, THE FILE IS ASSUMED TO
                          BE ATTACHED AND WILL NOT BE RETURNED)

EXAMPLE
    PRINT DOCUMENTATION FOR PROGRAMS *MANYDOC* AND *PROGDOC*:
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        MANYDOC,UTILITY,,,OUTPUT.
        *   7/8/9     EOR
        MANYDOC
        PROGDOC
        **  6/7/8/9   EOF
```

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   CLOSEM   DATE   EOF   FILESQ
        GET   IFETCH   MOVLEV   OPENM   PUT
        RECOVR   REMARK   SHIFT   TIME
    PART OF PROGRAM
        CLOSFIL - CLOSE FILES
        COPYDEK - COPY ONE DOCUMENT
        EOJ   - ABNORMAL TERMINATION ROUTINE
        FINDECK - LOCATE NEXT *DECK CARD
        GETFIL - ATTACH,DOCUMENTATION FILE
        GETIN   - READ INPUT DATA CARDS
        RECORD - MAKE PERMANENT RECORD OF REQUESTS   .
    OTHERS
        CPU467 - GET CPU PROGRAM IS RUNNING ON
        DVSORTA - SORT ARRAY
        FINDWRD - SEARCH ARRAY FOR WORD
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        IDID   - GET USER ID
        ISUMIT - SUM INTEGER ARRAY
        LASTC   - FIND LAST NON-BLANK
        MOVSTR - MOVE CHARACTER STRING
        PAKLFT - SQUEEZE LEFT AND REMOVE BLANKS
        PUTCHA - INSERT CHARACTER
        REDUCE - ADJUST CORE UP AND DOWN
        REQUEST - CALLABLE REQUEST
        VFILL   - FILL ARRAY WITH WORD
        ZPFUNC - CALLABLE PF FUNCTIONS

    ARITHMETIC STATEMENT FUNCTIONS
        FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
            L11FMT   L61FMT   L71FMT
        FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
            R51FMT   R56FMT

    AUTHOR
        DAVID V SOMMER - DTNSRDC CODE 1892.2

    DATE WRITTEN: 04/28/77

    DATE(S) REVISED
        05/05/77 - ADD CPU TO PERMANENT RECORD

    LOCATION OF DECKS
        SOURCE
            UPDATE LIBRARY: UTILITYPL,ID=CSYS
        OBJECT
            EDITLIB USER LIBRARY: UTILITY

PROGRAM 'MPSCM'

PURPOSE
    CONVERT PRINTED OUTPUT DATA INTO A COM FORMATTED TAPE TO
    PRODUCE MICROFICHE ON THE DATAGRAPHIX 4530 SYSTEM

FUNCTIONAL CATEGORY: JO

REMARKS
    NONE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        NONE
    PART OF PROGRAM
        SHUFL
    OTHERS
        NONE

LANGUAGE: COBOL

INPUT/OUTPUT UNITS
    LFN   USE
    -------   --
    TAPE03   MPS INPUT FILE (NAME MUST BE TAPE03)
                (MAY BE DISK OR MAGNETIC TAPE)
    TAPE04   MPS OUTPUT FILE (NAME MUST BE TAPE04)

EXECUTION
    FROM BATCH
        CXXX,CM55000,MT1.
        CHARGE,CXXX,JJJJJJJJJJ.
        ATTACH,TAPE03,PFN,ID=CXXX.
        VSN,TAPE04=CBXXXX.
        LABEL,TAPE04,L=COMOUT,D=HY,F=S,RING,R.
        BEGIN,UTILITY,,MPSCM.
        *   7/8/9   EOR
            (MPS INPUT DATA CARDS)
        ** 6/7/8/9   EOF

    FROM TTY
        NOT DESIGNED FOR TTY USE

    FL NEEDED TO LOAD: 55000B
    FL NEEDED TO RUN : 55000B

DATA CARDS
    $MODEA----- REQUEST FORMS FLASH, CHARACTER POLARITY, INDEX
                STATUS
    $MODEN----- SET UP MAX LINES PER PAGE, FIRST LINE OF OUTPUT
                FRAME, FICHE SEQUENCE NUMBER, FRAMES PER ROW,
                FRAMES PER COLUMN, GRID INSERT LINE, MAX OUTPUT
                LINE LENGTH
    $TITLS----- SEGMENT EYE-READABLE TITLE (MAX 4)
    $TITLB----- DEFINE LITERAL TO BE PRINTED IN EYE-READABLE
                TITLE
    $TITLK----- DEFINE EXTRACTED DATA FIELDS TO BE PLACED IN
                EYE-READABLE TITLE

    $INDX1----- DEFINE FIELD TO BE EXTRACTED FOR INDEX
    $LASTX1---- DEFINE FIELD TO BE EXTRACTED FOR LAST INDEX
    $BREAK----- SEQUENCE NUMBER OF ALL FICHE SINCE THE LAST
                FICHE BREAK
    $DATA1----- DEFINE FIELD TO BE EXTRACTED FOR DATA1
    $TRANS----- DATA CONTAINS COLONS
    $END ----- END OF INPUT

    THE SYSTEM DATE MAY BE PRINTED IN THE EYE-READABLE TITLE BY
    REQUESTING KKLLNNN BEGINNING IN COL 68 ON THE TITLK CARD.

    DATA CARD COLUMNS
    1...5...10...15...20...25...30...35...40...45...50...55...60
    ...65...70...75...80
    $MODEA MMA MMA MMA MMA
    $MODEN MMNNNN MMNNNN MMNNNN MMNNNN MMNNNN MMNNNN MMNNN
    N MMNNNN
    $TITLS NNLLLL NNLLLL NNLLLL NNLLLL
    $TITLB NNLLLL "LITERAL DATA"
    $TITLK KKLLNNN KKLLNNN KKLLNNN KKLLNNN KKLLNNN KKLLNNN KKLLN
    NN
    $INDX1 FF LL NNPPPP MMSSSS CCCC------CCCC
    (LASTX,BREAK,DATA SAME FORMAT AS INDX)

    FOR DESCRIPTION OF VARIOUS PARAMETERS SEE: "COMPUTER OUTPUT
    MICROFICHE REFERENCE MANUAL", CMD-16-76.

AUTHORS
    STROMBERG DATAGRAPHICS, INC.
    BARBARA J DAVIS - DTNSRDC CODE 1892.1

DATE WRITTEN: JULY 1976

DATE(S) REVISED
    07/ /76 - SEVERAL MODIFICATIONS
    08/02/76

LOCATION OF DECKS
    SOURCE
       CODE 1892.1
    OBJECT
       EDITLIB USER LIBRARY: UTILITY

PROGRAM 'MTDOC'

PURPOSE
    CREATE DOCUMENTATION TO DESCRIBE THE CONTENTS OF A MAGNETIC
    TAPE

    FUNCTIONAL CATEGORY: Q6

REMARKS
    IF ANY QUESTION IS ANSWERED WITH A SINGLE ENTRY OF ? , A
    LONG(ER), MORE DETAILED DESCRIPTION OF THE CURRENT ITEM
    IS TYPED.

    IF ANY QUESTION (EXCEPT FOR *DECK CARDS AND UNDERLINE
    CHARACTER) IS ANSWERED WITH A SINGLE ENTRY OF @ , THE
    CURRENT DOCUMENT IS TERMINATED.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   CONNEC   RECOVR   REMARK   SHIFT
    PART OF PROGRAM
        ANYMOR   - ASK IF ANY MORE DOCUMENTS TO BE CREATED
        CONTACT - ASK FOR PERSON TO CONTACT ABOUT THIS TAPE
        DECK1   - ASK IF *DECK CARDS DESIRED
        DENS   - ASK FOR TAPE DENSITY INFORMATION
        ECHO1   - ASK IF ECHO DESIRED
        ENDIT   - CLOSE PROGRAM AND PRINT SUMMARY
        EOJ   - ABNORMAL TERMINATION ROUTINE
        GET13   - GET VARIABLE LENGTH INFO AND PRINT IN COL 13
        LABL   - ASK FOR TAPE LABEL
        PRMPT   - ASK IF LONG/SHORT PROMPTING DESIRED
        REM   - ASK FOR ANY REMARKS
        RETENT   - ASK FOR RETENTION PERIOD
        TAPLOC   - ASK FOR TAPE LOCATION (6700 ROOM, ETC)
        TAPNO   - ASK FOR TAPE NUMBER (CA9999, ETC)
        TCREATE - ASK FOR CREATION DATE
        TDESCR   - ASK FOR DESCRIPTION OF TAPE CONTENTS
        TRUNC   - PRINT TRUNCATED MESSAGE
        UNDER1   - ASK WHICH UNDERLINE CHARACTER DESIRED
    OTHERS
        ELTIME   - TIMING ROUTINE
        FSETFIT - SET FTN FIT VALUES
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        IFMTV   - FAST VARIABLE LENGTH I-FORMAT DECODE
        JULIAN   - GREGORIAN/JULIAN DATE CONVERTER (SINGLE-YEAR)
        PAKLFT   - SQUEEZE LEFT AND REMOVE BLANKS AND 00B
        REQUEST - REQUEST,DOCMNT,*PF.
        TRAILBZ - CHANGE TRAILING BLANKS TO 00B

```
ARITHMETIC STATEMENT FUNCTIONS
    FAST I-FORMAT DECODE
        I11FMT
    FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
        L11FMT    L14FMT    L22FMT    L25FMT    L61FMT
    FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
        R13FMT    R56FMT


LANGUAGE: FORTRAN IV

METHOD
    TTY IS PROMPTED FOR EACH SECTION OF THE DOCUMENT.

INPUT/OUTPUT UNITS
    UNIT #     LFN                           USE
    -------    -------    --------------------------------------------
       1       ZZTTYI     TTY INPUT
       4       DOCMNT     CREATED DOCUMENTS (ON PF SPACE)
       5       ZZTTYO     TTY PROMPTER
               OUTPUT     FTN ERROR MESSAGES
EXECUTION
    FROM BATCH
        NOT DESIGNED FOR BATCH USE

    FROM TTY
        BEGIN,UTILITY,,MTDOC.
            (TTY IS PROMPTED FOR ALL INPUT)
        CATALOG,DOCMNT,....       AND/OR       MODIFY USING EDITOR

    EXECUTE CARD PARAMETERS
        MTDOC,DOCMNT,QUICK.
            DOCMNT   - CREATED DOCUMENT(S)
                         (MAY BE CATALOGED)
            QUICK    - 'Q'   - DO NOT PRINT INITIAL DESCRIPTION;
                                GIVE SHORT PROMPT FOR FIRST
                                QUESTIONS
                       OTHER - PRINT INITIAL DESCRIPTION AND LONG
                                PROMPTING FOR FIRST QUESTIONS
                       NOTE: OMIT UNTIL YOU ARE USED TO THE
                               PROGRAM, THEN USE Q.

    DEFAULT EXECUTE CARD
        MTDOC,DOCMNT.

    FL NEEDED TO LOAD: 35000B
    FL NEEDED TO RUN : 25000B
```

DATA
    THE FOLLOWING INFORMATION IS REQUESTED ONCE PER EXECUTION:
        1 - DO YOU WANT UPDATE *DECK CARDS GENERATED BEFORE EACH
            DOCUMENT? ENTER Y FOR YES, N FOR NO.
        2 - WHICH UNDERLINE CHARACTER DO YOU WANT?
            ENTER 1 FOR UNDERSCORE (_) OR 2 FOR HYPHEN (-).

    THE FOLLOWING INFORMATION IS REQUESTED FOR EACH DOCUMENT:
        3 - DO YOU WANT ALL ENTRIES ECHOED? (Y FOR YES, N FOR NO)
        4 - DO YOU WANT THE LONG OR SHORT FORM OF THE PROMPTING
            MESSAGES? ENTER L FOR LONG, S FOR SHORT.
        5 - TAPE NUMBER (1-6 CHARACTERS) (E.G., CA9999)
        6 - TAPE LABEL (4-7 CHARACTERS; BLANK FOR UNLABELLED)
        7 - DENSITY INFORMATION (6 CHARACTERS, AS FOLLOWS)
            1   - 7 (FOR 7-TRACK) OR 9 (FOR 9-TRACK)
            2-3 - DENSITY (LO, HI, HY, HD)
            4   - S/L/BLANK (FOR STRANGER/LONG/SCOPE)
            5-6 - EB/BLANK (EB ON 9-TRACK ONLY)
            (DEFAULT: '7HY   ')
        8 - LOCATION OF TAPE
            4/6/7 FOR 6400/6600/6700 ROOM OR
            DESCRIBE THE LOCATION (1-53 CHARACTERS)
        9 - CREATION DATE (WHEN LABEL WAS WRITTEN; MAY BE YY/DD
            OR MM/DD/YY
       10 - RETENTION PERIOD (AS SPECIFIED ON LABEL CARD) (1-999
            DAYS OR BLANK (7 DAYS) (LEFT-JUSTIFIED))
       11 - NAME OF PERSON RESPONSIBLE FOR CONTENTS OF TAPE
            ANY NUMBER OF 1- TO 60-CHARACTER LINES. END WITH A
            SINGLE ENTRY OF SEMI-COLON (;).
       12 - REMARKS. USE THIS SECTION FOR ANY REMARKS ABOUT THE
            TAPE OR ITS CONTENTS. YOU MAY WANT TO GIVE THE TAPE
            HISTORY. NOTE: TAPE CONTENTS IS ENTERED IN RESPONSE
            TO THE NEXT QUESTION. ANY NUMBER OF 1- TO
            60-CHARACTER LINES. END WITH A SINGLE ENTRY OF
            SEMI-COLON (;).
       13 - TAPE CONTENTS. ANY NUMBER OF 1- TO 60-CHARACTER
            LINES. END WITH A SINGLE ENTRY OF SEMI-COLON (;).
            HEADINGS ARE PROVIDED FOR FILE NUMBER, RECORD NUMBER
            AND CONTENTS OF THE RECORD.
       14 - END OF DOCUMENT. DO YOU WANT TO DO ANOTHER?
            (Y FOR YES, N FOR NO)

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 06/18/76

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'PAGEPRT'

PURPOSE
    PRINT SELECTED PAGE(S) FROM A DOCUMENT

    FUNCTIONAL CATEGORIES: S0 O1

REMARKS
    IF MORE THAN ONE PAGE REQUESTED, THEY MUST BE IN ORDER,
    AS THE DOCUMENT FILE IS SEARCHED ONLY ONCE.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM   EOF   FILESQ   GET   IFETCH
        OPENM   RECOVR   REMARK   SHIFT
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        IOPEN   - TEST FOR RM FILE OPEN
        REPLAC - REPLACE ONE CHARACTER WITH ANOTHER
        SETREW - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
    A105FMT - FAST A-FORMAT DECODE
    L11FMT - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
    L71FMT - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)

LANGUAGE: FORTRAN IV

METHOD
    HEADER LINES ('1' IN COLUMN ONE) ARE SEARCHED FOR
    'PAGE' IN COLUMNS 60-63. THE PAGE NUMBER MUST BE IN
    COLUMNS 65-74. LINES ARE COPIED UNTIL A NEW HEADER
    LINE IS ENCOUNTERED.

    END-OF-RECORD IS IGNORED; END-OF-FILE OR END-OF-INFORMATION
    WILL END THE PROGRAM.

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   --
       5   INPUT   OPTIONAL DATA CARDS
               CCRM   INPUT DOCUMENT FILE
               OUTPUT   LISTABLE OUTPUT

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        ATTACH,TAPE1,....   (DOCUMENT FILE)
        LDSET,LIB=UTILITY.
        PAGEPRT,....
        7/8/9
           (DATA CARDS. IF NONE, NO 7/8/9 IS REQUIRED)
        6/7/8/9

```
FROM TTY
    ATTACH,TAPE1,....        (DOCUMENT FILE)
    ATTACH,UTILITY.
    LIBRARY,UTILITY.
    PAGEPRT,TAPE1,0,OUT,R,$1-14$.      (PRINT PAGE 1-14)
    ROUTE,OUT,DC=PR,....

       --OR--

    ATTACH,TAPE1,....        (DOCUMENT FILE)
    ATTACH,UTILITY.
    LIBRARY,UTILITY.
    CONNECT,INPUT.
    PAGEPRT,TAPE1,0,OUT.
       (ENTER PAGE NUMBERS, ONE AT A TIME, END WITH
       PERCENT EOF)
    ROUTE,OUT,DC=PR,....

EXECUTE CARD PARAMETERS
    PAGEPRT,INFILE,ID,OUTPUT,REW,PAGE,INPUT.
         INFILE   - INPUT DOCUMENT FILE
                    ONE OF:
                    .1-7 CHARACTER PFN OF DOCUMENT FILE TO BE
                     ATTACHED BY PROGRAM;
                    .1-7 CHARACTER LFN OF ALREADY ATTACHED FILE;
                    .OMITTED FOR COMPUTER CENTER REFERENCE
                     MANUAL.
         ID       - ONE OF:
                    .ID OF DOCUMENT FILE TO BE ATTACHED BY PROGR
                     PROGRAM;
                    .0, IF DOCUMENT FILE ALREADY ATTACHED;
                    .OMITTED FOR COMPUTER CENTER REFERENCE
                     MANUAL, OR ANY OTHER FILE WITH SYSTEM
                     PUBLIC ACCESS ID.
         OUTPUT   - LISTABLE OUTPUT
         REW      - INFILE REWIND OPTION
                    A     - REWIND AFTER USE
                    B     - REWIND BEFORE USE
                    R     - REWIND BEFORE AND AFTER USE
                            (DEFAULT)
                    U     - REWIND BEFORE, REWIND AND UNLOAD
                            AFTER USE (FORCED IF BOTH INFILE AND
                            ID OMITTED)
                    OTHER - NO REWIND
                    (ANY WORDS BEGINNING WITH THESE LETTERS WILL
                    PRODUCE THE SAME RESULTS)
         PAGE     - IF OMITTED, PAGE NUMBERS READ FROM FILE
                    INPUT.
                    IF SPECIFIED, THIS IS A 1-7 CHARACTER PAGE
                    NUMBER (ENCLOSE IN $ IF ANY SPECIAL
                    CHARACTERS).
         INPUT    - DATA CARD INPUT FILE.  USED ONLY IF PAGE
                    PARAMETER OMITTED.
```

DEFAULT EXECUTE CARD
    PAGEPRT,*,**,OUTPUT,REWIND,,INPUT.
        * - COMPUTER CENTER REFERENCE MANUAL
        ** - SYSTEM PUBLIC ACCESS ID

    FL NEEDED TO LOAD: 32000B
    FL NEEDED TO RUN : 23000B

DATA CARDS (ONLY IF PAGE PARAMETER OMITTED)
    COL   CONTENTS
    ----- --------
    1-10   PAGE NUMBER

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 02/09/76

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'PFDOC'

PURPOSE
    CREATE PERMANENT FILE DOCUMENTATION

    FUNCTIONAL CATEGORY: Q6

REMARKS
    IF ANY QUESTION IS ANSWERED WITH A SINGLE ENTRY OF ? , A
    LONG(ER), MORE DETAILED DESCRIPTION OF THE CURRENT ITEM
    IS TYPED.

    IF ANY QUESTION (EXCEPT FOR *DECK CARDS AND UNDERLINE
    CHARACTER) IS ANSWERED WITH A SINGLE ENTRY OF @ , THE
    CURRENT DOCUMENT IS TERMINATED.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   CONNEC   DATE   EOF   MIN0
        MOVLEV   OR   RECOVR   REMARK   SHIFT
    PART OF PROGRAM
        AC   - ASK FOR ACCOUNT NUMBER (AC)
        ANYMOR   - ASK IF ANY MORE DOCUMENTS TO BE CREATED
        BACKUP   - ASK WHERE BACKUPS ARE
        CY   - ASK FOR CYCLE
        DATES   - ASK FOR DATE CREATED, BY WHOM AND WHEN REVISED
        DECK1   - ASK IF *DECK CARDS DESIRED
        DESCR   - ASK FOR DESCIPTION OF THE PERMANENT FILE
        ECHO1   - ASK IF ECHO DESIRED
        ENDIT   - CLOSE PROGRAM AND PRINT SUMMARY
        EOJ   - ABNORMAL TERMINATION ROUTINE
        FMT   - ASK FOR FILE FORMAT
        GETPFN   - ASK FOR PERMANENT FILE NAME
        GET14   - GET VARIABLE LENGTH INFO AND PRINT IN COL 14
        GET18   - GET VARIABLE LENGTH INFO AND PRINT IN COL 18
                (ENTRY IN GET14)
        GET29   - GET VARIABLE LENGTH INFO AND PRINT IN COL 29
                (ENTRY IN GET14)
        ID   - ASK FOR ID FILE IS CATALOGED UNDER
        PASS   - ASK FOR PASSWORDS
        PRMPT   - ASK IF LONG/SHORT PROMPTING DESIRED
        TRUNC   - PRINT TRUNCATED MESSAGE
        UNDER1   - ASK WHICH UNDERLINE CHARACTER DESIRED
        WHERE   - ASK WHERE WRITEUP AND LISTING ARE
    OTHERS
        ELTIME   - TIMING ROUTINE
        FINDWRD - SEE IF WORD IN IN ARRAY
        FSETFIT - SET FTN FIT VALUES
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        REPLAC   - REPLACE ONE CHARACTER WITH ANOTHER
        UNLOAD   - RETURN FILES
        ZBLANK   - CHANGE BLANKS TO 00B AND VICE VERSA

ARITHMETIC STATEMENT FUNCTIONS
    R110FMT - FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)

LANGUAGE: FORTRAN IV

METHOD
    TTY IS PROMPTED FOR EACH SECTION OF THE DOCUMENT.

    ALL SECTIONS ARE ALWAYS ASKED FOR EXCEPT THAT WHEN AN XR
    PASSWORD IS GIVEN, THE CN, EX, MD PASSWORDS ARE NOT
    REQUESTED.

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   --
      1   ZZTTYI   TTY INPUT
      4   DOCMNT   CREATED DOCUMENTS (ON PF SPACE)
      5   ZZTTYO   TTY PROMPTER
                OUTPUT   FTN ERROR MESSAGES

EXECUTION
    FROM BATCH
        NOT DESIGNED FOR BATCH USE

    FROM TTY
        BEGIN,UTILITY,,PFDOC.
            (TTY IS PROMPTED FOR ALL INPUT)
        CATALOG,DOCMNT,....   AND/OR   MODIFY USING EDITOR

    EXECUTE CARD PARAMETERS
        PFDOC,DOCMNT,QUICK.
            DOCMNT   - CREATED DOCUMENT(S)
                       (MAY BE CATALOGED)
            QUICK   - 'Q'   - DO NOT PRINT INITIAL DESCRIPTION;
                                GIVE SHORT PROMPT FOR FIRST
                                QUESTIONS
                     OTHER - PRINT INITIAL DESCRIPTION AND LONG
                                PROMPTING FOR FIRST QUESTIONS
                     NOTE: OMIT UNTIL YOU ARE USED TO THE
                                PROGRAM, THEN USE Q.

    DEFAULT EXECUTE CARD
        PFDOC,DOCMNT.

    FL NEEDED TO LOAD: 37000B
    FL NEEDED TO RUN : 30000B

DATA
    THE FOLLOWING INFORMATION IS REQUESTED ONCE PER EXECUTION:
        1 - DO YOU WANT UPDATE *DECK CARDS GENERATED BEFORE EACH
            DOCUMENT? ENTER Y FOR YES, N FOR NO.
            (THE DECK NAME WILL BE THE FIRST 7 CHRACTERS OF
            THE PFN)
        2 - WHICH UNDERLINE CHARACTER DO YOU WANT?
            ENTER 1 FOR UNDERSCORE (_) OR 2 FOR HYPHEN (-).

    THE FOLLOWING INFORMATION IS REQUESTED FOR EACH DOCUMENT:
        3 - DO YOU WANT ALL ENTRIES ECHOED? (Y FOR YES, N FOR NO)
        4 - DO YOU WANT THE LONG OR SHORT FORM OF THE PROMPTING
            MESSAGES? ENTER L FOR LONG, S FOR SHORT.
        5 - PFN (1-40 CHARACTERS)
        6 - ID (1-9 CHARACTERS)
        7 - AC (10 CHARACTERS)
        8 - CV (1-3 DIGITS)
        9 - TURNKEY PASSWORD (TK) (1-9 CHARACTERS)
       10 - READ PASSWORD (RD) (1-9 CHARACTERS)
       11 - READ ONLY (XR) PASSWORD (1-9 CHARACTERS)
            IF XR IS BLANK, ASK FOR THE NEXT 3 PASSWORDS
       12 - CONTROL PASSWRD (CN) (1-9 CHARACTERS)
       13 - EXTEND PASSWORD (EX) (1-9 CHARACTERS)
       14 - MODIFY PASSWORD (MD) (1-9 CHARACTERS)
       15 - SPECIAL PASSWORD (1-9 CHARACTERS)
            (REQUESTED ONLY IF ID IS PPUBLIC ACCESS ID)
       16 - FILE FORMAT. THERE ARE 12 RECOGNIZED ABBREVIATIONS
            AND PROVISION FOR USER-SPECIFIED DESCRIPTION.
            TO FIND CURRENT LIST, ANSWER ? TO THIS QUESTION.
       17 - DATE FILE CREATED. ENTER MM/DD/YY OR ENTER
            SEMI-COLON (;) FOR TODAY.
       18 - NAME OF PERSON WHO CREATED THE FILE
            (1-30 CHARACTERS)
       19 - DATES THE FILE WAS REVISED (EXTENDED OR MODIFIED).
            ANY NUMBER OF 1-55 CHARACTER LINES. END WITH A
            SINGLE ENTRY OF SEMI-COLON (;).
       20 - WHERE IS THE WRITEUP LOCATED?
            ANY NUMBER OF 1-44 CHARACTER LINES. END WITH A
            SINGLE ENTRY OF SEMI-COLON (;).
       21 - WHERE IS THE LISTING LOCATED?
            ANY NUMBER OF 1-44 CHARACTER LINES. END WITH A
            SINGLE ENTRY OF SEMI-COLON (;).
       22 - WHAT BACKUP IS THERE FOR THE FILE AND WHERE IS IT?
            ANY NUMBER OF 1-59 CHARACTER LINES. END WITH A
            SINGLE ENTRY OF SEMI-COLON (;).
       23 - GIVE A DESCRIPTION OF THE FILE.
            ANY NUMBER OF 1-59 CHARACTER LINES. END WITH A
            SINGLE ENTRY OF SEMI-COLON (;).
       24 - END OF DOCUMENT. DO YOU WANT TO DO ANOTHER?
            (Y FOR YES, N FOR NO)

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATA WRITTEN: 12/04/73 (ORIGINALLY CALLED 'SDOC')

DATE(S) REVISED
    12/12/73
    01/09/74
    01/15/76 (NAME CHANGED TO 'PFDOC')
    07/07/76 - 1) CHANGE TERMINATE CHARACTER TO a.
              2) ADD QUICK OPTION.
              3) REMOVE CENTERED LISTABLE OUTPUT.
              4) ADD 'D' (DOCUMENTATION FILE) TO TYPES OF FILE
                 FORMATS.
              5) REMOVE ABILITY TO LIST FINAL DOCUMENT(S) AT
                 TTY.
              6) ADD RESPONSE LENGTHS TO PROMPTING MESSAGES.

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'PROGDOC'

PURPOSE
    EXTRACT (PRINT) ONE OR ALL DOCUMENT(S) FROM A DOCUMENTATION
    FILE   .

FUNCTIONAL CATEGORY: Q6

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    DOCUMENTATION FILE IS COMPATIBLE WITH AN UPDATE 'SOURCE'
    FILE OF *DECK'S ONLY.

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        LDSET,LIB=UTILITY.
        PROGDOC,LIBRARY,ID,PROGNAME.

    FROM TTY
        BEGIN,UTILITY,,PROGDOC,LIBRARY,ID,PROGNAME,OUT.
        DISPOSE,OUT,PR=XYY.

    EXECUTE CARD PARAMETERS
        PROGDOC,LIBRARY,ID,ROUTINE,OUTPUT,LEFT,DOCFILE.
            LIBRARY - NAME OF LIBRARY CONTAINING ROUTINE FOR WHICH
                      DOCUMENTATION IS DESIRED
                      MAY BE ONE OF:
                          NSRDC
                          UTILITY (DEFAULT)
                          ANY OTHER LIBRARY NAME (1-7 CHAR)
                      PROGRAM WILL ATTACH AND RETURN THE
                      DOCUMENTATION FILE. THE PFN USED WILL BE
                      THE LIBRARY NAME SPECIFIED, FOLLOWED BY
                      'DOCUMENTATION' (DEFAULT IS
                      'UTILITYDOCUMENTATION')
            ID   - ID UNDER WHICH DOCUMENTATION IS CATALOGED
                      (DEFAULT IS THE SYSTEM PUBLIC ACCESS ID)
            ROUTINE - NAME OF ROUTINE FOR WHICH DOCUMENTATION
                      IS DESIRED
                      ('ALL' TO PRINT ALL DOCUMENTATION)
                      (DEFAULT IS 'NONE')
            OUTPUT - LISTABLE OUTPUT
            LEFT   - PRINT CENTERING
                      MISSING OR 'LEFT' - LEFT-JUSTIFIED ON PAGE
                      OTHER   - CENTERED ON LARGE PAGE
                      (DEFAULT IS LEFT-JUSTIFIED)
            DOCFILE - IF USER HAS PREVIOUSLY ATTACHED A
                      DOCUMENTATION FILE, PLACE LFN HERE AND OMIT
                      THE FIRST 2 PARAMETERS ('LIBRARY' AND 'ID').
                      WHEN THIS PARAMETER IS USED AND IS NOT
                      'ZZDOC', THE FILE IS NOT RETURNED AT END OF
                      EXECUTION.

```
DEFAULT EXECUTE CARD
    PROGDOC,UTILITY,*---*,NONE,OUTPUT,LEFT,TAPE1,ZZDOC.

DEFAULT PL: 15000 LINES

FL NEEDED TO LOAD: 32000B
FL NEEDED TO RUN : 22000B

FORMAT OF THE DOCUMENTATION FILE
    THE FIRST RECORD OF EACH DOCUMENT IDENTIFIES IT
        COL     CONTENTS
        -----   --------
        1-5     *DECK
         6      BLANK
        7-14    DOCUMENT NAME
                (1-7 CHARACTERS,
                NO EMBEDDED BLANKS OR SPECIAL CHARACTERS)

    EACH DOCUMENT IS COMPOSED OF RECORDS OF THE FOLLOWING FORM:
        COL     CONTENTS
        -----   --------
         1      CARRIAGE CONTROL
                (TO ALLOW DOCUMENTATION TO BE PRINTED AT ALL
                TERMINALS, AVOID THE MINUS (-) CARRIAGE CONTROL)
        2-80    LINE OF DOCUMENT

INPUT/OUTPUT UNITS
    UNIT #     LFN                        USE
    -------    -------    -----------------------------------------------
               OUTPUT     LISTABLE OUTPUT
               ZRECORD    PERMANENT RECORD OF REQUEST
                          (ATTACHED AND RETURNED WITHIN PROGRAM)
       1       ZZDOC      FILE CONTAINING DOCUMENTATION
                          (ATTACHED AND RETURNED WITHIN PROGRAM)
                          (IF THE USER REPLACES THE FILE NAME AT
                          EXECUTION TIME, THE FILE IS ASSUMED TO
                          BE ATTACHED AND WILL NOT BE RETURNED)

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND         CLOSEM      FILESQ      GET       IFETCH
        OPENM       OR          PUT         RECOVR    REMARK
        SHIFT       STOREF
    PART OF PROGRAM
        EOJ     - ABNORMAL TERMINATION ROUTINE
    OTHERS
        CPU467  - GET MACHINE PROGRAM IS RUNNING ON
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        LASTC   - FIND LAST NON-BLANK/NON-00B CHARACTER
        MOVSTR  - MOVE CHARACTER STRING
        PAKLFT  - SQUEEZE BLANKS AND ZEROS OUT OF PFN
        REPLAC  - REPLACE ONE CHARACTER WITH ANOTHER
        REQUEST - REQUEST,ZRECORD,*PF.
        UNLOAD  - RETURN,TAPE1.
        ZPFUNC  - ATTACH DOCUMENTATION FILE
```

ARITHMETIC STATEMENT FUNCTIONS
    FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
        L11FMT   L61FMT   L77FMT
    FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
        R92FMT

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 01/27/75

DATE(S) REVISED
    03/26/75
    02/07/77 - CHANGE TO RECORD MANAGER; IMPROVE ERROR MESSAGE
    03/31/77 - ADD AND SET PERMANENT RECORD FLAG
    05/05/77 - ADD CPU TO PERMANENT RECORD

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'PROMNT'

PURPOSE
    MAINTAIN AN ALPHABETICAL, SEQUENTIAL PROCEDURE FILE, EACH
    PROCEDURE BEING ONE SCOPE LOGICAL RECORD

FUNCTIONAL CATEGORIES: Q7 K1

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    EACH PROCEDURE MUST BE ONE AND ONLY ONE LOGICAL RECORD.
    EMPTY RECORDS WILL BE FLAGGED IN THE LISTINGS (FCN= H, L, N,
    Q) AND REMOVED (WITH COUNT IN DAYFILE) IN MAINTENANCE (FCN=
    A, D, R).

EXECUTION
    FROM BATCH
        ATTACH,TAPE1,....   (INPUT PROCEDURE FILE)
        BEGIN,UTILITY,,PROMNT,....

    FROM TTY
        ATTACH,TAPE1,....   (INPUT PROCEDURE FILE)
        BEGIN,UTILITY,,PROMNT,,,,,,,OJT.
        ROUTE,OUT,DC=PR,....

    EXECUTE CARD PARAMETERS
        PROMNT,INFILE,OUTFILE,FCN,NAME,ID,OUTPUT.
            INFILE   - INPUT PROCEDURE FILE
            OUTFILE - OUTPUT PROCEDURE FILE
                       (FOR FCN: A, D, G, R)
            FCN   - FUNCTION. ONE OF:
                       A OR ADD   - ADD PROCEDURE 'NAME'
                       D OR DELETE - DELETE PROCEDURE 'NAME'
                       G OR GET   - EXTRACT PROCEDURE 'NAME'
                                      AND PUT ON 'OUTFILE'
                       H OR HEADERS - LIST PROCEDURE HEADERS
                       L OR LIST   - LIST ALL PROCEDURES (OR
                                      PROCEDURE 'NAME') EACH
                                      STARTING ON A NEW PAGE
                       N OR NAMES   - LIST PROCEDURE NAMES
                       Q   - QUICK LIST OF PROCEDURE NAMES
                                      (NO HEADINGS, SINGLE COLUMN)
                       R OR REPLACE - REPLACE PROCEDURE 'NAME'
            NAME   - ONE OF:
                       PROCEDURE NAME
                         (FOR FCN: G, L: IF OMITTED, ALL)
                       FILE CONTAINING NEW PROCEDURE
                         (FOR FCN: A, D, R)
            ID   - OPTIONAL ID FOR FCN: H, L, N.
                       IF SPECIFIED - HEADING HAS ID = XXXX.
                       IF OMITTED   - HEADING HAS LFN: INFILE.
            OUTPUT   - LISTABLE OUTPUT

    DEFAULT EXECUTE CARD
        PROMNT,TAPE1,TAPE2,*,ALL,,OUTPUT.
            * - USER MUST SPECIFY

```
FL NEEDED TO LOAD: 36000B
FL NEEDED TO RUN : 26000B
    (PROGRAM ADJUSTS CORE AS REQUIRED)

INPUT/OUTPUT UNITS
   UNIT  #      LFN                              USE
   -------      -------    -------------------------------------------
      4         ALL        NEW PROCEDURE INPUT FILE
                OUTPUT     LISTABLE OUTPUT
      1         TAPE1      INPUT PROCEDURE FILE
      2         TAPE2   `  OUTPUT PROCEDURE FILE
                DAYFILE    MESSAGE(S) ON WHAT WAS DONE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
   PART OF LANGUAGE
       AND         BUFFERIN   BUFFEROUT  CLOSEM      DATE
       FILESO      GET        IFETCH     LENGTH      MOD
       MOVLEV      OPENM      RECOVR     REMARK      TIME
       UNIT
   PART OF PROGRAM
       ADD       - ADD A PROCEDURE
       COPY      - COPY PROCEDURES
       DELETE    - DELETE A PROCEDURE
       EOJ       - ABNORMAL TERMINATION ROUTINE
       GETNEW    - GET PROCEDURE NAME FROM NEW PROCEDURE
       GETNEW1   - GET NEW PROCEDURE (ENTRY POINT IN GETNEW)
       GETPRO    - BUFFER IN ONE PROCEDURE
       GETPRO2   - BUFFER IN FIRST TWO WORDS OF A PROCEDURE
       GETT      - EXTRACT ONE PROCEDURE
       HEADERS   - LIST PROCEDURE HEADERS
       LIST      - LIST ONE OR ALL PROCEDURES
       NAMES     - LIST PROCEDURE NAMES
       PRTDEL    - PUT NUMBER OF EMPTY RECORDS DELETED IN DAYFILE
       PUTPRO    - BUFFER OUT ONE PROCEDURE
       QUICK     - QUICK LIST OF PROCEDURE NAMES (NO HEADINGS)
       REPL      - REPLACE A PROCEDURE
   OTHERS
       EXTPRM    - EXTRACT NEXT PARAMETER FROM STRING
       FSETFIT   - SET FTN FIT VALUES
       GETLFNS   - GET ACTUAL LOCAL FILE NAMES
       REDUCE    - ADJUST CORE AS REQUIRED
       REQUEST   - GET PF SPACE FOR OUTPUT FILE
       UNLOAD    - RETURN FILES

ARITHMETIC STATEMENT FUNCTIONS
   FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
       L41FMT      L51FMT      L61FMT      L71FMT      L81FMT
       L91FMT
   OTHERS
       NROWS     - COMPUTE NUMBER OF ROWS IN PRINTOUT
```

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 05/28/76

DATE(S) REVISED
    02/03/77 - PROCESS EMPTY RECORDS

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS

PROGRAM 'PRUDMP'

PURPOSE
    OCTAL AND CHARACTER DUMP OF DISK FILE BY RELATIVE PRU NUMBER

    FUNCTIONAL CATEGORIES: J9 K3

REMARKS
    NONE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM   FILESQ   GETP   IFETCH   MAXO
        MOD   MOVLEV   OPENM   SHIFT   SKIP
        STOREF
    PART OF PROGRAM
        DMP   - DO ACTUAL PRINTING OF THE PRU
        EOJ   - ABNORMAL TERMINATION ROUTINE
        GETFMTS - DEFINE FORMATS FOR 'DMP'
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        IFMTV   - FAST VARIABLE LENGTH I-FORMAT DECODE
        MFETCH   - READ SPECIFIED WORD IN USER'S FL
        REPLACM - REPLACE MULTIPLE CHARACTERS IN AN ARRAY
        SETREW   - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
    NONE

LANGUAGE: FORTRAN IV

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   --
       .   OUTPUT   LISTABLE OUTPUT
               TAPE1   FILE TO BE DUMPED

EXECUTION
    FROM BATCH
        ATTACH,TAPE1,.....   DISK FILE TO BE DUMPED
        BEGIN,UTILITY,,PRUDMP,,....

    FROM TTY
        ATTACH,TAPE1,.....   DISK FILE TO BE DUMPED
        BEGIN,UTILITY,,PRUDMP,OUT,....
        ROUTE,OUT,DC=PR,....

```
EXECUTE CARD PARAMETERS
    PRUDMP,INFILE,START,NPRUS,OUTPUT,REW,SUP,CC,PRUS,WRDS.
        INFILE  - INPUT FILE TO BE DUMPED
        START   - STARTING PRU NUMBER (DECIMAL)
                  0 OF OMITTED - START AT BEGINNING OF FILE
        NPRUS   - NUMBER (DECIMAL) OF PRUS TO BE DUMPED
                  (DEFAULT: 9999999 (ALL OF FILE))
        OUTPUT  - LISTABLE OUTPUT
        REW     - INFILE REWIND OPTION
                  A     - REWIND AFTER USE
                  B     - REWIND BEFORE USE   (DEFAULT)
                  R     - REWIND BEFORE AND AFTER USE
                  U     - REWIND BEFORE, REWIND AND UNLOAD
                          AFTER USE
                  OTHER - NO REWIND
                  (ANY WORDS BEGINNING WITH THESE LETTERS
                  WILL PRODUCE THE SAME RESULTS)
        SUP     - CHARACTER PRINTING SUPPRESS OPTION
                  OMITTED OR SUP - SUPPRESS CHARACTERS WITH
                                   DISPLAY CODE 60B OR
                                   HIGHER  (DEFAULT)
                  ANYTHING ELSE  - PRINT ALL CHARACTERS
        CC      - CARRIAGE CONTROL OPTION
                  OMITTED OR 'CC' - PRINT DUMP ON NEW PAGE
                  ANYTHING ELSE   - PRINT DUMP ON SAME PAGE
        PRUS    - OMITTED OR 'OPRU' - PRINT OCTAL PRU COUNT
                  ANYTHING ELSE     - PRINT DECIMAL PRU COUNT
        WRDS    - OMITTED OR 'OWRD' - PRINT OCTAL WORD COUNT
                  ANYTHING ELSE     - PRINT DECIMAL WORD COUNT
                  NOTE: WORD COUNT WITHIN PRU IS ALWAYS OCTAL.

    DEFAULT EXECUTE CARD
        PRUDMP,TAPE1,1,9999999,OUTPUT,BEFORE,SUP.

    FL NEEDED TO LOAD: 32000B
    FL NEEDED TO RUN : 23000B

  AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 05/24/76 - TOTAL REWRITE DUPLICATING AND
                         EXPANDING THE CAPABILITIES OF THE
                         SCOPE 3.3 PROGRAM WRITTEN BY MEL
                         HAAS - DTNSRDC CODE 1843

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:    UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:  UTILITY
```

PROGRAM 'PTIM'

PURPOSE
    PRINT CPA, CPB, CPA+CPB, IO AND PP TIMES SINCE START OF JOB
    OR INTERCOM SESSION

    FUNCTIONAL CATEGORY: QO

REMARKS
    OUTPUT FILE WILL BE CONNECTED.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CONNEC
    OTHERS
        ALTIME - OBTAIN TIMES

LANGUAGE: FORTRAN IV

OUTPUT UNITS
    UNIT__#   __LEN__   -------------------USE------------------
               OUTPUT   LISTABLE OUTPUT

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        LOSET,LIB=UTILITY.
        PTIM.

    FROM TTY
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        PTIM.

    EXECUTE CARD PARAMETERS
        PTIM,OUTPUT.
            OUTPUT - LISTABLE OUTPUT

    DEFAULT EXECUTE CARD
        PTIM,OUTPUT.

    FL NEEDED TO LOAD: 22000B
    FL NEEDED TO RUN : 13000B

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 01/08/76

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'PURPOSE'

PURPOSE
    EXTRACT PURPOSE INFORMATION FROM DOCUMENTATION FILES
    (WHICH WERE PREPARED IN THE FORMAT GENERATED BY PROGRAM
    'DOC')

    FUNCTIONAL CATEGORIES: SO   Q6

REMARKS
    DOCUMENTATION FILE IS COMPATIBLE WITH AN UPDATE 'SOURCE'
    FILE OF *DECK'S ONLY.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   DATE   EOF   OR   RECOVR
        REMARK   SHIFT   TIME
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        GETLFNS - GET ACTUAL FILE NAMES
        PAKLFT - SQUEEZE BLANKS AND ZEROS OUT OF PFN
        UNLOAD - RETURN,TAPE1.
        ZPFUNC - ATTACH DOCUMENTATION FILE

ARITHMETIC STATEMENT FUNCTIONS
    L11FMT - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
    L61FMT - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
    L77FMT - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
    R92FMT - FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   --
        1   ZZDOC   FILE CONTAINING DOCUMENTATION
                         (ATTACHED AND RETURNED WITHIN PROGRAM)
                         (IF THE USER REPLACES THE FILE NAME AT
                         EXECUTION TIME, THE FILE IS ASSUMED TO
                         BE ALREADY ATTACHED AND WILL NOT BE
                         RETURNED)
               OUTPUT   LISTABLE OUTPUT

EXECUTION
    FROM BATCH
        BEGIN,UTILITY,,PURPOSE,LIBRARY,ID.

    FROM TTY
        BEGIN,UTILITY,,PURPOSE,LIBRARY,ID,ANY,....
        ROUTE,ANY,DC=PR,....

```
EXECUTE CARD PARAMETERS
    PURPOSE,LIBRARY,ID,OUTPUT,LEFT,DOCFILE.
        LIBRARY - NAME OF LIBRARY TO BE EXTRACTED
                  MAY BE ONE OF:
                      NSRDC
                      UTILITY (DEFAULT)
                      ANY OTHER LIBRARY NAME (1-7 CHAR)
                  PROGRAM WILL ATTACH AND RETURN THE
                  DOCUMENTATION FILE.  THE PFN USED WILL BE
                  THE LIBRARY NAME SPECIFIED, FOLLOWED BY
                  'DOCUMENTATION'  (DEFAULT IS
                  'UTILITYDOCUMENTATION')
        ID      - ID UNDER WHICH DOCUMENTATION IS CATALOGED
                  (DEFAULT IS THE SYSTEM PUBLIC ACCESS ID)
        OUTPUT  - LISTABLE OUTPUT
        LEFT    - PRINT CENTERING
                  OMITTED OR 'LEFT' - LEFT-JUSTIFIED ON PAGE
                  ANYTHING ELSE     - CENTERED ON LARGE PAGE
                  (DEFAULT IS LEFT-JUSTIFIED)
        DOCFILE - IF USER HAS PREVIOUSLY ATTACHED A
                  DOCUMENTATION FILE, PLACE LFN HERE AND OMIT
                  THE FIRST 2 PARAMETERS ('LIBRARY' AND 'ID').
                  WHEN THIS PARAMETER IS USED AND IS NOT
                  'ZZDOC', THE FILE IS NOT RETURNED AT END OF
                  EXECUTION.

    DEFAULT EXECUTE CARD
        PURPOSE,UTILITY,*---*,OUTPUT,LEFT,ZZDOC.

    FL NEEDED TO LOAD: 31000B
    FL NEEDED TO RUN : 21000B

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 08/04/75

DATE(S) REVISED
    05/05/76
    05/18/76

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:  UTILITY
```

PROGRAM 'REDECK'

PURPOSE
    CHANGE AN UPDATE COMPILE FILE BACK INTO A SOURCE FILE

    FUNCTIONAL CATEGORY: Q7

REMARKS
    *DECK CARDS ARE ADDED BEFORE EACH DECK.
    UPDATE SEQUENCING IS REMOVED.

    A NEW DECK BEGINS:
        A) AFTER END-OF-SECTION OR END-OF-PARTITION;
        B) WITH CHANGE OF DECK (COL 74-82) ONLY IF PREVIOUS
           CARD WAS FORTRAN END CARD ('   END   ' IN
           COL 1-20) OR COMPASS END CARD ('END ' IN COL 11-14).
    THE CONDITIONS FOR B) ALLOW DECKS TO HAVE *COMDECK CALLS
    WITHOUT TRIGGERING A NEW DECK. (*COMDECK CALLS HAVE THE
    COMDECK NAME IN 74-82, WHICH IS USUALLY DIFFERENT FROM THE
    MAIN DECK NAME.)

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM
        FILESQ
        GET
        IFETCH
        OPENM
        PUT
        RECOVR
        REMARK
        SHIFT
        STOREF
    OTHERS
        EOJ   - ABNORMAL TERMINATION ROUTINE
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        REDUCE - REDUCE CORE TO MINIMUM NEEDED TO RUN
        REQUEST - REQUEST,TAPE2,*PF.

ARITHMETIC STATEMENT FUNCTIONS
    A21FMT - FAST A-FORMAT DECODE (LEFT-ADJ, BLANK-FILLED)
    A55FMT - FAST A-FORMAT DECODE (LEFT-ADJ, BLANK-FILLED)
    A94FMT - FAST A-FORMAT DECODE (LEFT-ADJ, BLANK-FILLED)
    L11FMT - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
    L41FMT - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
    L81FMT - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
    R41FMT - FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)

LANGUAGE: FORTRAN IV

INPUT/OUTPUT UNITS
    FORTRAN   LOCAL
    LOGICAL   FILE
    U N I T   NAME   USE
    -------   -------   --
                TAPE1   INPUT COMPILE FILE
                TAPE2   OUTPUT SOURCE FILE
                OUTPUT   LISTABLE OUTPUT (DECK NAMES)
                DAYFILE   TOTAL NUMBER OF DECKS

```
EXECUTION
    FROM BATCH AND TTY
        ATTACH,OLDPL,...
        UPDATE,P,...
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        REDECK,COMPILE.
        (CATALOG,TAPE2,...)

    EXECUTE CARD PARAMETERS
        REDECK,INFILE,OUTFILE,REW,OUTPUT.
            INFILE  - INPUT COMPILE FILE
            OUTFILE - OUTPUT SOURCE FILE
            REW     - TAPE1 REWIND OPTION
                A       - REWIND AFTER USE
                B       - REWIND BEFORE USE
                R       - REWIND BEFORE AND AFTER USE
                U       - REWIND BEFORE, REWIND AND UNLOAD
                            AFTER USE
                OTHER - NO REWIND (DEFAULT)
                (ANY WORDS BEGINNING WITH THESE LETTERS WILL
                PRODUCE THE SAME RESULTS)
            OUTPUT  - LISTABLE OUTPUT (DECK NAMES)

    DEFAULT EXECUTE CARD
        REDECK,TAPE1,TAPE2,NOREW,OUTPUT.

    FL NEEDED TO LOAD: 27000B
        (PROGRAM REDUCES TO MINIMUM NEEDED TO RUN)

AUTHOR
    DAVID V SOMMER - NSRDC CODE 1892.2

DATE WRITTEN: 06/30/75

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:  UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:  UTILITY
```

PROGRAM 'SORTUP'

PURPOSE
    GENERATE UPDATE DIRECTIVES TO SORT OLDPL

FUNCTIONAL CATEGORY: Q7

REMARKS
    THIS UTILITY ALLOWS A USER TO SORT THE DECKS IN HIS UPDATE
    LIBRARY TO BE IN ALPHABETICAL ORDER. THE PRODUCT IS THE
    NECESSARY UPDATE '*MOVE' DIRECTIVES. A SORTED LIST OF EACH
    PARTITION IS ALSO PROVIDED.

    'SOURCE' AND 'TAPE7' ARE NOT REWOUND.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   EOF   OR   REMARK   SHIFT
    OTHERS
        PAKLFT - SQUEEZE LEFT AND REMOVE BLANKS
        SSORTL - SORT DECK NAMES

ARITHMETIC STATEMENT FUNCTIONS
    NROWS - COMPUTE # OF ROWS IN PRINTOUT OF SORTED DECK NAMED

METHOD
    THE SOURCE FILE (FROM 'UPDATE,P,F,S.') IS READ AND ALL *DECK
    AND *COMDECK CARDS ARE DETECTED. THE DECK NAMES ARE CHECKED
    FOR SPECIAL CHARACTERS. IF THE DECK NAME HAS SPECIAL
    CHARACTERS, IT IS CONSIDERED A DELIMITER DIVIDING THE
    LIBRARY INTO LOGICAL PARTITIONS; OTHERWISE, THE NAME IS
    ADDED TO THE LIST OF NAMES IN THAT PARTITION. UPON
    ENCOUNTERING THE END OF THE PARTITION, '*MOVE' CARDS ARE
    WRITTEN ON 'TAPE7' TO SORT THE DECKS IN THAT PARTITION.

    UPDATING THE OLDPL WITH THESE DIRECTIVES WILL CAUSE THE
    OLDPL TO BECOME SORTED ALPHABETICALLY.

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   ---
       1   SOURCE   SOURCE FILE FROM 'UPDATE,P,F,S.'
       7   TAPE7   WILL CONTAIN '*MOVE' DIRECTIVES
                           (TO BE USED AS INPUT TO 'UPDATE')
                OUTPUT   LISTABLE OUTPUT CONTAINING STATISTICS
                           OF RUN AND SORTED LIST(S)

```
EXECUTION
    FROM BATCH
        ATTACH,OLDPL,....
        UPDATE,P,F,S.
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        SORTUP.
        REQUEST,NEWPL,*PF.
        REWIND,TAPE7.
        UPDATE,P,N,I=TAPE7.
        CATALOG,NEWPL,....

    FROM TTY
        ATTACH,OLDPL,....
        UPDATE,P,F,S,O=OUT.
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        SORTUP,,,OUT.
        REQUEST,NEWPL,*PF.
        REWIND,TAPE7.
        UPDATE,P,N,I=TAPE7,O=OUT.
        CATALOG,NEWPL,....
        DISPOSE,OUT,PR=XYY.

    EXECUTE CARD PARAMETERS
        SORTUP,INFILE,MOVEDIR,OUTPUT.
            INFILE  - INPUT FILE (UPDATE SOURCE FILE)
            MOVEDIR - OUTPUT FILE OF *MOVE DIRECTIVES
            OUTPUT  - LISTABLE OUTPUT

    DEFAULT EXECUTE CARD
        SORTUP,SOURCE,TAPE7,OUTPUT.

    FL NEEDED TO LOAD: 27000B
    FL NEEDED TO RUN : 17000B

AUTHOR
    C FLINK - KPS NWL

DATE WRITTEN: 09/26/73

DATE(S) REVISED
    11/29/73 - V1.1 - DAVID V SOMMER - NSRDC CODE 1892.2
    03/17/75

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:    UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:   UTILITY
```

PROGRAM 'TAPDMP'

PURPOSE
    DUMP SELECTED PORTIONS OF A 7-TRACK MAGNETIC TAPE WRITTEN IN
    AN UNKNOWN DENSITY AND/OR MODE. IT IS CONTROLLED BY A
    SERIES OF FREE-FIELD CONTROL CARDS CONTAINING ORDERS FOR THE
    DUMPING, SKIPPING OR BACKSPACING OF RECORDS OR FILES.

    FUNCTIONAL CATEGORIES: J9 K4

EXAMPLE
    DUMP THE FIRST 2 AND LAST 2 RECORDS OF A FILE:

        CXXX,MT1.   NAME/CODE
        CHARGE CARD
        VSN,DTAPE=SLOTXX=EXTID.
        REQUEST,DTAPE,HY,NORING.
        ATTACH,UTILITY.
        LOSET,LIB=UTILITY.
        TAPDMP.
        *   7/8/9   EOR
        DUMP 2 RECORDS. SKIP 1 FILE.
        BACKSPACE 2 RECORDS. DUMP 2 RECORDS.
        "   6/7/8/9   EOF

    NOTE: THE DATA CARD COULD HAVE BEEN ABBREVIATED AS:
            D 2 R. S 1 F. B 2 R. D 2 R.

    NOTE: OUTPUT WILL BE UP TO 4096 LINES. TO CHANGE THIS, USE
          TAPDMP(LC=NNNNNNN)   WHERE NNNNNNN IS THE NEW LINE
          COUNT LIMIT (1-9999999).

DATA CARDS
    DATA CARDS ARE PUNCHED IN FREE FORM WITH THE FIELDS
    SEPARATED BY BLANKS AND THE COMMANDS SEPARATED BY PERIODS.
    ANY NUMBER OF COMMANDS MAY APPEAR ON A CARD, BUT COMMANDS
    MAY NOT BE SPLIT ACROSS CARDS. THE FULL COMMAND, OR ITS
    ABBREVIATION, IS OBEYED UNTIL ONE OF THE FOLLOWING
    CONDITIONS:
        1) THE END OF THE COMMAND STRING;
        2) AN END-OF-TAPE CONDITION IS DETECTED;
        3) AN INVALID COMMAND IS ENCOUNTERED.

COMMANDS
    COMMANDS CONTAIN 1, 2 OR 3 FIELDS AND ARE SUMMARIZED, WITH
    ABBREVIATIONS, IN THE TABLE BELOW:

FIELD 1	ABBR.	FIELD 2	FIELD 3	ABBR.
DUMP	D	N	RECORD(S)/FILE(S)	R/F
PRINT	P	N	DITTO	
INTERPRET	I	N	DITTO	
SKIP	S	N	DITTO	
BACKSPACE	B	N	DITTO	
EXPECT	E	200/556/800	BINARY/CODED	B/C
NAME=	N=	FILENAME	,NOREWIND	,N
ALL	A			
REWIND	R			

COMMAND ACTION

DUMP   - CODED READ: TAPE CONTENTS PRINTED AS A HOLLERITH
              STRING WITH EACH POSITION COUNT SHOWN.
              BINARY READ: TAPE CONTENTS PRINTED AS OCTAL
              WORDS.

              EACH RECORD HAS A HEADER SHOWING ITS RECORD AND
              FILE NUMBER ON THE TAPE.

PRINT   - CODED READ: SAME AS DUMP.
              BINARY READ: CONTENTS PRINTED IN HOLLERITH.
              TO PREVENT PROBLEMS WITH EMBEDDED BINARY ZEROS,
              THESE ARE CHANGED TO BLANKS BEFORE PRINTING.

INTERPRET   - CODED READ: SAME AS DUMP.
              BINARY READ: PRINTED IN OCTAL AND HOLLERITH, AS
              IN THE PRINT COMMAND.

SKIP   - SKIP DESIGNATED NUMBER OF RECORDS OR FILES. ALL
              RECORDS READ ARE FULLY CHECKED FOR READABILITY
              AND ARE TALLIED IN THE RECORD AND FILE COUNT,
              BUT WILL NOT BE PRINTED UNDER ANY CONDITION.

BACKSPACE   - BACKSPACE SPECIFIED NUMBER OF RECORDS OR FILES.
              IF A FILE MARK OR BEGINNING OF TAPE IS
              ENCOUNTERED WHILE BACKSPACING, TAPE MOTION STOPS
              WITH THE TAPE POSITIONED AHEAD OF THE FILE MARK.

EXPECT   - IF THE USER KNOWS THE MODE AND/OR DENSITY USED
              TO WRITE THE TAPE, THE FIRST READ CONDITIONS
              USED BY "TAPDMP" CAN BE SET WITH THE EXPECT
              COMMAND. THIS WILL ALSO DETERMINE THE MODE AND
              DENSITY USED TO PRINT A RECORD IN CASE AN
              UNRECOVERABLE PARITY ERROR IS ENCOUNTERED.

NAME=   - THIS COMMAND ALLOWS THE USER TO OVERRIDE THE
              DEFAULT FILENAME (DTAPE). THUS, MANY TAPES CAN
              BE DUMPED IN ONE EXECUTION OF THE PROGRAM.

              THE THIRD FIELD (NOREWIND) IS USED TO INHIBIT
              THE INITIAL REWIND ON THE TAPE BEING DUMPED. IN
              THIS CASE, REVERSE MOTION OF THE TAPE WILL CAUSE
              THE FIRST RECORD AND FILE TO HAVE ORDINALS OF -1
              ASSIGNED, SINCE THE STARTING NUMBERS MUST BE
              RELATIVE TO THE STARTING POSITION OF THE TAPE.

ALL   - NORMALLY, "TAPDMP" WILL IGNORE SYSTEM NOISE
              RECORDS INTRODUCED AS A RESULT OF RECOVERED
              WRITE ERRORS. THIS WILL GIVE THE USER A TRUE
              COUNT OF HIS DATA RECORDS. IF IT IS DESIRED TO
              CHECK FOR THE POSSIBLE PRESENCE OF THESE NOISE
              RECORDS, THE "ALL" COMMAND MAY BE ISSUED TO
              TALLY EACH PRU OF THE TAPE REGARDLESS OF ITS
              CONTENT. ONCE ISSUED, THIS COMMAND MAY NOT BE
              TURNED OFF.

REWIND   - REWIND THE TAPE BEING DUMPED.

DEFAULT SETTINGS
    1) NAME=DTAPE.
    2) ALL FILES BEING DUMPED ARE INITIALLY REWOUND UNLESS
       "NOREWIND" IS SPECIFIED ON THE "NAME=" COMMAND.
    3) IF NO CONTROL CARDS, "DUMP 5 RECORDS." IS ASSUMED.
    4) IF A PROBABLE SYSTEM LABEL IS FOUND, THE USER IS INFORMED
       AND THE LABEL FILE IS INCLUDED IN THE RECORD AND FILE
       COUNTS.
    5) THE USER MAY NOT SPECIFY THE KIND OF FILE MARK USED TO
       DELIMIT FILES. "TAPDMP" WILL INFORM THE USER WHETHER IT
       HAS FOUND A SCOPE EOF (LEVEL 17 8-CHARACTER PRU) OR A
       TAPE MARK.

LIMITATIONS
    1) ONLY THE FIRST 50 COMMANDS WILL BE PROCESSED.
    2) ONLY 50 FILES PER TAPE CAN BE HANDLED PROPERLY. IF MORE
       ARE PRESENT, RECORD COUNTS WITHIN THESE FILES CANNOT BE
       HELD.
    3) WILL NOT OBEY A COMMAND REQUIRING FORWARD MOTION IF IT
       HAS FOUND AN EOT REFLECTIVE MARKER AS A RESULT OF
       COMPLETING THE PREVIOUS COMMAND. SUCH FORWARD
       POSITIONING WILL ABORT THE RUN.
    4) THERE IS NO EFFECTIVE LIMITATION ON THE SIZE OF BLOCK
       WHICH MAY BE DUMPED. "TAPDMP" WILL OBTAIN MORE STORAGE
       AS NEEDED FOR BUFFER SPACE.
    5) DENSITY DETERMINATION CANNOT BE DONE WITH CONFIDENCE
       BETWEEN 556 AND 800 BPI, AS A READ SETTING OF 800 WILL
       ALSO READ MOST TAPES WRITTEN AT 556 BPI. TO REDUCE THIS
       PROBLEM AS MUCH AS POSSIBLE, "TAPDMP" TRIES 556 BPI FIRST
       BEFORE SWITCHING TO ANOTHER DENSITY.

REMARKS
    1) IF A NEW TAPE IS DUMPED, IT MAY RUN OFF THE END OF THE
       REEL.

LANGUAGE: RUN FORTRAN AND CDC 6000 CP AND PP COMPASS

INPUT/OUTPUT UNITS
UNIT #	LEN	USE
99	INPUT	INPUT FILE OF COMMANDS
	OUTPUT	LISTABLE OUTPUT

```
EXECUTION
    FROM BATCH
        ...CARDS TO MOUNT TAPE
        BEGIN,UTILITY,,TAPDMP.
        *       7/8/9    EOR
            (COMMANDS)
        "     6/7/8/9    EOF

    FROM TTY
        CANNOT BE RUN FROM TTY

    EXECUTE CARD PARAMETERS
        TAPDMP,INPUT,OUTPUT.
            INPUT   - INPUT FILE OF COMMANDS
            OUTPUT  - LISTABLE OUTPUT

    DEFAULT EXECUTE CARD
        TAPDMP,INPUT,OUTPUT.

    FL NEEDED TO LOAD: 25000B
    FL NEEDED TO RUN : 15000B
        (PROGRAM ADJUSTS CORE UP AND DOWN AS REQUIRED)

AUTHOR
    R. S. SMITH

DATE WRITTEN: APRIL, 1972

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:    UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'TAPLIST'

PURPOSE
    PREPARE TWO LISTS FROM MAGTAPEDOCUMENTATION FILE:
        1) LIST OF TAPE NUMBER, LABEL, DENSITY, REMARKS AND
           DESCRIPTION FOR EACH TAPE DOCUMENTED IN FILE
        2) LIST OF TAPE NUMBERS AND LABELS

FUNCTIONAL CATEGORY: Q6

LANGUAGE: FORTRAN IV

REMARKS
    INFORMATION IS EXTRACTED FROM A FILE OF DOCUMENTS WHICH
    ARE IN THE FORMAT GENERATED BY PROGRAM 'MTDOC' AND CATALOGED
    AS 'MAGTAPEDOCUMENTATION,ID=CXXX', WHERE CXXX' IS
    SUPPLIED TO THE PROGRAM.

EXECUTION
    FROM BATCH
        BEGIN,UTILITY,,TAPLIST,CXXX.

    FROM TTY
        BEGIN,UTILITY,,TAPLIST,CXXX,OUT.
        ROUTE,OUT,DC=PR,....

    EXECUTE CARD PARAMETERS
        TAPLIST,ID,OUTPUT,LEFT.
            ID   - ID UNDER WHICH PFN MAGTAPEDOCUMENTATION
                       IS CATALOGED
            OUTPUT   - LISTABLE OUTPUT
            LEFT   - CENTERING OPTION
                       OMITTED OR LEFT - PRINT LEFT-JUSTIFIED
                       ANYTHING ELSE   - PRINT CENTERED ON WIDE
                                         PAGE

    DEFAULT EXECUTE CARD
        TAPLIST,*,OUTPUT,LEFT.
            * - USER MUST SUPPLY

    FL NEEDED TO LOAD: 32000B
    FL NEEDED TO RUN : 22000B
        (PROGRAM ADJUSTS CORE AS REQUIRED)

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   --
              OUTPUT   LISTABLE OUTPUT
       1   ZZDOC   DOCUMENTATION FILE (ATTACHED AND
                        RETURNED BY PROGRAM)

```
SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        DATE        EOF         MINO        MOD         RECOVR
        REMARK      SHIFT       TIME
    PART OF PROGRAM
        EOJ     - ABNORMAL TERMINATION ROUTINE
        PRT     - PRINT REMARKS AND DESCRIPTION SECTIONS
    OTHERS
        EQU60   - COMPARE 2 ARRAYS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        REDUCE  - ADJUST CORE UP AND DOWN AS REQUIRED
        UNLOAD  - RETURN,ZZDOC.
        VFILL   - FILL ARRAY WITH WORD
        ZPFUNC  - ATTACH,ZZDOC,MAGTAPEDOCUMENTATION,ID=CXXX.

ARITHMETIC STATEMENT FUNCTIONS
    NONE

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 10/06/76

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:    UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:    UTILITY
```

```
PROGRAM 'UNDOCIT'

PURPOSE
   REMOVE THE PAGING WHICH WAS ADDED TO A DOCUMENT BY PROGRAM
   'DOCIT'

FUNCTIONAL CATEGORY:    Q6

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
   NONE

EXECUTION
   FROM BATCH
      NOT DESIGNED FOR BATCH USE

   FROM TTY
      CONNECT,OUTPUT
      ATTACH,UTILITY.
      LIBRARY,UTILITY.
      PROGDOC,MYLIB,CXXX,PROG,OLD.
         (GET EXISTING DOCUMENT 'PROG' FROM DOCUMENT FILE
          HAVING PFN=MYLIBDOCUMENTATION, ID=CXXX, AND PUT INTO
          FILE 'OLD'.)
      UNDOCIT,OLD,OLD1.
         (REMOVE OLD PAGING)
      EDITOR
      EDIT,OLD1,SAVE
         (MAKE CHANGES DESIRED, INCLUDING RESTRUCTURING OF
          PAGES.  INDICATE START OF EACH PAGE BY PUTTING A
          '1' IN COLUMN 1 OF EACH LINE WHICH IS TO BE THE FIRST
          LINE OF A PAGE.)
      SAVE,NEWDOC,NOSEQ
      LINER,NEWDOC.
         (WILL COUNT PAGES AND NUMBER OF LINES PER PAGE.  IF
          ANY PAGE HAS MORE THAN 59 LINES, GO BACK AND
          RESTRUCTURE.)
      BYE
      DOCIT,NEWDOC,FILE.
         (PUT PAGING BACK ON)
      BEGIN,DOCREPL,,MYLIB,CXXX,PROG,,FILE,AC,PW1,PW2.
         (REPLACE DOCUMENT 'PROG' ON FILE HAVING
          PFN=MYLIBDOCUMENTATION, ID=CXXX. SUPPLY AC, PW1,
          PW2, IF REQUIRED.)

   EXECUTE CARD PARAMETERS
      UNDOCIT,INFILE,OUTFILE,OUTPUT.
         INFILE  - INPUT DOCUMENT
         OUTFILE - OUTPUT DOCUMENT
         OUTPUT  - LISTABLE OUTPUT (FTN ERROR MESSAGES)

   DEFAULT EXECUTE CARD
      UNDOCIT,TAPE1,TAPE2,OUTPUT.

   FL NEEDED TO LOAD: 33000B
   FL NEEDED TO RUN : 23000B
      (PROGRAM ADJUSTS CORE AS REQUIRED)
```

INPUT/OUTPUT UNITS
```
    UNIT  #    LFN                               USE
    -------   -------   ------------------------------------------
              OUTPUT    LISTABLE OUTPUT
                        (FTN ERROR MESSAGES)
              TAPE1     INPUT DOCUMENT
              TAPE2     OUTPUT DOCUMENT
```

METHOD
    THE DOCUMENT IS READ ONE PAGE AT A TIME. IF THE LAST LINE
    HAS '/' IN COLUMNS 4 AND 7, IT IS REMOVED, AS ARE ANY LINES
    IMMEDIATELY PRECEDING IT WHICH CONTAIN A '0' IN COLUMN 1
    AND BLANKS IN THE REST OF THE LINE.

    A COUNT OF THE RECORDS IN AND OUT IS PUT INTO THE DAYFILE.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   CLOSEM   FILESQ   GET   IFETCH
        MOVLEV   OPENM   PUT   REMARK
    PART OF PROGRAM
        UNDO   - REMOVE BOTTOM OF PAGE AND OUTPUT THE PAGE
    OTHERS
        EQU60   - COMPARE TWO ARRAYS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        LASTC   - FIND LAST NON-BLANK IN ARRAY
        REDUCE   - GET MORE CORE AS REQUIRED
        REQUEST - REQUEST,TAPE2,*PF.

ARITHMETIC STATEMENT FUNCTIONS
    FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
        L11FMT   L12FMT   L71FMT

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 10/28/76

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM "WHATLIB"

PURPOSE
    LIST LIBRARIES SPECIFIED ON LAST LIBRARY CARD

    FUNCTIONAL CATEGORY: Q0

REMARKS
    NONE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   DATE   TIME
    OTHERS
        RCPA   - READ CONTROL POINT AREA

ARITHMETIC STATEMENT FUNCTIONS
    R1FMT   - FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)

LANGUAGE: FORTRAN IV

OUTPUT UNIT
    UNIT_# __LEN__ ---------------------USE-------------------
            OUTPUT   LISTABLE OUTPUT

EXECUTION
    FROM BATCH
        OF LIMITED USE IN BATCH
            BEGIN,UTILITY,,WHATLIB.

    FROM TTY
        CONNECT,OUTPUT
        BEGIN,UTILITY,,WHATLIB.

    EXECUTE CARD PARAMETERS
        WHATLIB,OUTPUT.
            OUTPUT - LISTABLE OUTPUT

    DEFAULT EXECUTE CARD
        WHATLIB,OUTPUT.

    FL NEEDED TO LOAD: 23000B
    FL NEEDED TO RUN : 13000B

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 1975

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'WHICHMF'

PURPOSE
    TELL TELETYPE USER WHICH MAINFRAME HE IS USING

FUNCTIONAL CATEGORY: Q0

LANGUAGE: CDC 6000 CP COMPASS

REMARKS
    NONE

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        LDSET,LIB=UTILITY.   OR   LIBRARY,UTILITY.
        WHICHMF.

    FROM TTY
        BEGIN,UTILITY,,WHICHMF.

    EXECUTE CARD PARAMETERS
        WHICHMF.

    DEFAULT EXECUTE CARD
        WHICHMF.

    FL NEEDED TO LOAD: 11000B
    FL NEEDED TO RUN : 300B

OUTPUT UNITS
      LFN   USE
    -------   ---
    DAYFILE   MAINFRAME MESSAGE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        NONE
    OTHERS
        MACHINE - GET BATCH USER DAYFILE HEADING

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 04/18/75

DATE(S) REVISED
    08/24/77 - CHANGE NAME FROM WHICHCP TO WHICHMF
               ADD MFA/MFB/MFC TO MESSAGE

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'WHICHOS'

PURPOSE
    TELL TELETYPE USER WHICH OPERATING SYSTEM HE IS USING

    FUNCTIONAL CATEGORY: Q0

REMARKS
    NONE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        NONE
    OTHERS
        MACHINE - GET BATCH USER DAYFILE HEADING

LANGUAGE: CDC 6000 COMPASS

EXECUTION
    FROM BATCH AND TTY
        ATTACH,UTILITY.
        LIBRARY,UTILTTY.
        WHICHOS.

    DEFAULT EXECUTE CARD
        WHICHOS.

    FL NEEDED TO LOAD: 20000B

AUTHOR
    DAVID V SOMMER - NSRDC CODE 1892.2

DATE WRITTEN: 04/18/75

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        TAPE LABELLED CSYSUTILITYPL;   P.F. UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

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